Brought from the Lords, 22 November 1852.

REPORT:

DRAINAGE OF LANDS (IRELAND).

Ordered, by The House of Commons, *to be Printed,*
22 November 1852.

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Brought from the Lords, 22 November 1852.

REPORT

FROM THE

SELECT COMMITTEE OF THE HOUSE OF LORDS

APPOINTED TO INQUIRE INTO

The Operation of the ACTS relating to the DRAINAGE of LANDS in IRELAND, as administered by the BOARD of WORKS;

AND TO REPORT THEREON TO THE HOUSE;

TOGETHER WITH THE

MINUTES OF EVIDENCE,

AND

APPENDIX.

Session 1852.

Ordered, by The House of Commons, *to be Printed,*
22 *November* 1852.

REPORT.

BY THE LORDS COMMITTEES appointed a SELECT COMMITTEE, to inquire into the Operation of the Acts relating to the DRAINAGE of LANDS in IRELAND, as administered by the Board of Works, and to report to The House; and to whom leave was given to report from time to time to The House; and to whom were referred several PETITIONS and DOCUMENTS relating to the subject-matter of the Inquiry:—

ORDERED TO REPORT,

THAT the Committee have met, and considered the subject-matter to them referred, having before them the First, Second, Third and Fourth Annual Reports on Drainage (Ireland), Arterial Drainage (Ireland), General Correspondence (1852), Correspondence relative to Brusna (Ferbane) Drainage (1852), and have examined five Witnesses in relation thereto.

The Committee (owing to the pressure of business in other Committees) were not able to proceed with their inquiry into the important and very difficult subject entrusted to them until Thursday the 27th of May last.

They have not examined fully into any of the specific cases of alleged abuse contained in the Petitions referred to them. Without local knowledge a detailed inquiry could scarcely have been effective; and as many Witnesses would have been necessary in each case, at so advanced a period of the Session, such an inquiry would have been impracticable.

Their attention has been principally directed to an examination of the system generally under which the arterial drainage of Ireland is at present proceeding, calling incidentally for explanations as to individual cases, but rather however as examples of the whole system, than as the subject-matter of a distinct and regular inquiry.

The primary object of the Drainage Acts seems to have been to encourage arterial drainage by supplying the requisite machinery without the intervention of a Private Act in each case.

With that view the 1 & 2 Will. 4, c. 57, was passed, subsequently amended by the 5 & 6 Vict. c. 105.

These Acts produced no practical result, and in 1842 the 5 & 6 Vict. c. 89, became law. The Board of Works was then remodelled, and Mr. Mulvany was appointed the Commissioner of Public Works, charged especially with the duties of carrying out the Acts for arterial drainage.

It appears that he was, in the first instance, employed by Mr. Griffith as a surveyor on the Boundary Survey; then he was employed under the Shannon Navigation Commission, where large works were carried on for the purpose both of navigation and drainage; and subsequently he was selected, principally at the recommendation of Sir J. Burgoyne, Chairman of the Board Griffith, 132.

of Works, as a fit person to be appointed Commissioner to make the experiment of working the 5 & 6 Vict., then just become law. Mr. Mulvany was at the same time appointed Commissioner of Fisheries. The Committee are of opinion that as soon as it became evident that the works would no longer be of that "simple and inexpensive character" at first contemplated, but were becoming of serious importance, it would have been very desirable that there should have been an inspection from time to time, by some independent engineer of experience in such works; and the Committee regret that so obvious a precaution was not taken at a very early period by the Treasury.

First Annual Report, p. 4.

The Board of Works at first proceeded very cautiously, laying down certain definite principles, as well for their own guidance, as for the information of parties about to seek their intervention.

Second Report, p. 9.

As to estimates, the principles upon which they were to proceed were very clearly set out. "With respect to estimates, our instructions to the engineers are, to include every item of expenditure likely to arise, and to take especial care that the amount shall be sufficient to complete the works in the plainest, but at the same time in the most substantial manner, for which they are held responsible; and, before we finally sanction any undertaking, we adopt every reasonable precaution to assure ourselves that the works may be executed within the estimates. * * * * * * Sometimes the very same parties ask for a pledge that the cost of the works shall not exceed the estimates, but this cannot be given, although we, both from consideration of duty as well as inclination, make every exertion to have the works executed on the most reasonable terms consistent with efficiency, and feel tolerably confident that, except under circumstances of an unusual nature, they will be completed without an exceeding of the estimates; and that although the risk of each operation may be considered as attaching to the parties sought to be benefited, yet that there need be little apprehension of its success."

The principles upon which the increase of value to be anticipated from drainage operations were to be calculated were laid down with equal clearness.

Second Report, p. 10.

"In estimating that increase in the value of lands which may be expected to result from the execution of the works proposed, we take only the difference between the fair letting value, when so improved, and their present actual value as the basis of our calculation, and from this datum we calculate the return upon the expenditure.

"This increase is directed to be calculated upon the most moderate and reasonable grounds, so that no exaggerated amount of benefit should seem to be assumed; and, in the cases already submitted to the test of public opinion, we have scarcely had any objection raised to this item in the valuations, though it is that which fixes the estimated relative amount of future liability, and therefore is the most likely to give rise to complaint, if any grounds for it existed."

There was a further precautionary provision in the First Report, p. 4, that works were not to be undertaken, "at least in the commencement, for which "a probable permanent return of 10 per cent. or more on the whole expen- "diture would not be had."

So successful were the first works undertaken, and so definite and satisfactory were the principles laid down, both as to estimates and valuations, that the public gradually acquired confidence, and the applications for preliminary surveys became rapidly more numerous and more important.

P. 40.

The Commissioners of Public Works, in their capacity of Commissioners of Drainage, under the 5 & 6 Vict. and the subsequent Drainage Acts, are entrusted with powers very similar in many respects to a Committee under a Private Act; but in the case of a Private Act, the security which the proprietors and other parties interested have, consist in the personal interest of the Committee, who are themselves proprietors; whereas, in the case of the Commissioners of Public Works, the security is the character of a Board appointed by Government, and responsible to Parliament.

It seems to have been very generally believed in Ireland that, practically, there was a certain controlling power in the Irish Executive; but this was never the

the case: the Treasury had from the commencement the appointment and dismissal of the Commissioners, and, at a subsequent period, assumed more direct control, in order to ensure the security of the large sum of public money advanced.

The correspondence between Sir Charles Trevelyan, Assistant Secretary of the Treasury, and the Commissioners of Public Works, beginning in 1842, and continued to the present time, gives a connected view of the various steps taken by the Treasury in reference to the whole system of Arterial Drainage. Arterial Drainage, Ireland, 1852.

From 1842 to 1848, there seems to be nothing in that correspondence which especially calls for observation. However, in 1848, we perceive that the Treasury were becoming alarmed at the outlay which was taking place on the surveys and estimates which precede drainage works, and direct that no further preliminary proceedings be carried on; that no works not already begun be commenced, and that every practicable exertion be made to bring to an early close the works which were nearest completion, making the Chairman responsible for the due execution of these instructions. At length, appended to a letter from the Chairman of the Board of Works, dated 21 December 1849, there is a Return, indicating pretty clearly that many of the works would largely exceed the estimates; and that is followed by another Return, of the 31st of January 1850, showing that 106 works had been then commenced, and that there was an excess over estimate in 61 cases. P. 156, Correspondence. P. 289. P. 304.

The second Return was accompanied by a statement, in a few words, of the causes in each case of excess. The principal causes of excess assigned were additional works, increased size of the works, and extension of area to be drained. It is rather remarkable that in the case of Borrisokane, it is stated that the extra works were "at the request of the proprietors;" this is stated in no other case, and that remark seems almost necessarily to have raised the question, if it had not immediately suggested itself, whether, in the cases of the other works, the wishes of the proprietors, representing "a majority of acres," had been ascertained before it had been resolved upon to make additional or larger works, or to increase the area to be drained. The Committee find from the evidence that no steps were then or subsequently taken by the Treasury to obtain information on this point; but they directed that the works should be completed with as little delay as might be possible, consistent with their proper execution, and that they should be completed, as far as was consistent with safety, by contract. P. 305. P. 305.

At an early period, the proprietors and the drainage department of the Board appear to have differed in opinion upon a very important principle, the proprietors generally being favourable to the construction of works of moderate dimensions and moderate cost, sufficient to protect from ordinary floods, while the drainage department, latterly at least, seem to have aimed at "complete measures," proof against floods, however large. In fact, while the proprietors desired, at a moderate cost, to improve the low lands for pasture and meadow, the Board seemed to have aimed at the conversion of the low lands into arable land, by making the works so capacious as to afford complete security against floods, however large and unusual. Report, p. 4. 1 Report, p. 4.

The proprietors, in fact, looking at the question with the view to remuneration, were favourable to "half measures;" districts were differently circumstanced. In many cases, the lands, occasionally flooded, produced a higher average rent than arable land. In some cases, lands naturally barren, were rendered, to a certain extent, fertile by the deposit of mud from the winter floods. In all cases where there was to be a heavy outlay, there was the question of profit and loss. Whether the proprietors were right, or whether, on the other hand, the officer in charge of the drainage department of the Board was right, is a question upon which the Committee are unable to offer any opinion. This, however, seems probable, that had the wishes of the proprietors been ascertained previously to any large departure from the plans and estimates originally agreed upon, there would have been a very general dissent. In the single case of Borrisokane drainage, above referred to, it is stated that the extra works were "at the request of the proprietors;" and the presumption seems 19 Report, p. 47. Correspondence, Brusna (Ferbane), p. 13, No. 13. Griffith, 344. Correspondence, p. 305.

seems to be, that had not an adverse result been anticipated, the proprietors would regularly have been consulted in the other cases.

It appears to be a matter of regret, that when the Commissioners of Public Works resolved upon any large departure from the plans and estimates agreed upon with the proprietors, the Treasury did not at once direct an inspection, by some eminent civil engineer, of great experience in drainage works, acting independently of the Board. His opinion would, probably, have governed the proprietors, and their consent would then have been obtained to any increase of estimate necessary to make the works efficient.

The remainder of the correspondence contains nothing which seems to throw much light upon the general question, and, therefore, we come to the Parliamentary Return, ordered the 28th July 1851, and printed the 5th February 1852, which gives the latest information as to the state of the works.

See Appendix.

By the Return of September 30th, 1851, it appears that whereas the original estimate of the works now unfinished was £. 1,179,374, the new estimate was £.1,863,168, of which an estimated amount of £. 683,794 was still required to complete the works. If to that estimated amount we add one-third, and it seems scarcely safe to add less, looking to past experience, the amount still to be expended will be nearly a million; and if so large a sum is to be expended, it is obviously important to secure its judicious application.

In the course of this inquiry certain questions have been raised, to which it is necessary briefly to advert. It has been asked, what right had the Commissioners in charge of the drainage department to throw aside the plans and estimates assented to by the proprietors, enlarging the works, making additional works, extending the area to be operated upon, making outfalls for the deep instead of the shallow system of draining; all changes attended with a heavy additional cost, without consulting the proprietors who were to pay for the works.

5 & 6 Vict. c. 89, s. 53.

In answer to this question, Sir C. Trevelyan says, that under the Act the Commissioners of Public Works had full power to do so; that they were in fact Trustees for the mortgagees as well as the proprietors, and others interested in the lands; and that so long as they acted with good faith and did not come to a decision until after hearing all parties, they were not exposed to censure.

Griffith, 336.
Larcom, 504, 505.

Mr. Griffith, Chairman of the Board of Works, says, that he would have considered it his duty to consult the proprietors; and Major Larcom's evidence leads to the same conclusion.

Looking at the question in the abstract, the reasoning which would transform the Commissioners of Public Works into Trustees, invested with almost an irresponsible authority, is inconclusive. It is based upon the supposition that the interests of mortgagees, annuitants and other persons having property in the lands are in safer keeping with the Commissioners than they would be with the landed proprietors. In the one case the property of the mortgagees is practically in the keeping of the officers charged with the drainage department, who have no direct interest in the matter; in the other case, it is in the keeping of the proprietors, whose interests are identical with theirs, and who are besides in this position, that they could not injure them without first destroying themselves.

Second Report of Commissioners of Public Works, p. 9.

Taking a wider and more practical view of the question, it does not seem evident how the operation of the claim to irresponsible authority is reconcileable with the clear exposition of principles set out in the Second Report before alluded to. Neither does it seem probable that the Legislature ever intended that a construction should be put upon an Act of Parliament, which should proclaim that the proprietors of land in Ireland, alone in the United Kingdom, were incapable of managing their own affairs, and therefore unfit to be entrusted with the consequential interests of others.

The Committee have carefully examined the clause under which it has been alleged that the officer in charge of the drainage department of the Board of Works was justified in making extensive alterations and enlargements, and also in making additional works, at great additional cost, without consulting the Proprietors;

Proprietors; and while it was absolutely necessary that a power to deviate and enlarge should have been given by the Act, otherwise any departure, however small, from the plan and section agreed upon would have been an infraction of the law, the Committee are of opinion, that it never was the intention of the Legislature that the power so conferred should have been applied to so great an extent, or in a manner so arbitrary. The Committee are further of opinion, that as it appears in evidence that the Drainage Acts were framed under the supervision of the drainage department of the Board of Works, there was, in that circumstance, an additional reason for extreme caution in not employing too strongly a power supposed to be conferred by a single expression in the clause referred to. The Committee have been unable to discover any precedent or authority which seems at all to justify the construction which has been put upon that clause,—a construction so wide as to involve principles utterly at variance with the right of private property.

Another question has been raised, involving the same principle, but comparatively, to a very trifling extent, whether the Commissioners were justified in employing private drainage works as a means of relieving public pauperism, without first apprizing the parties who were to pay, of the loss they would sustain, and obtaining their consent. The confusion which prevailed at a time of extreme distress, and the numerous applications from various quarters may, perhaps, be some excuse, for otherwise, it would be the case of a railway carried on as a relief work without the consent of the shareholders. Many complaints have been made, that the accounts were not deposited with the Clerk of the Peace, as required by law. It has been answered, that the Treasury had provided an audit in London, and that, during the famine, there was not time to comply with the Act. After the famine, however, the Act was not complied with, and the audit in London was no security against abuse in carrying on the works. The Committee, therefore, are of opinion, that no sufficient reason has been assigned for the violation of a provision of an Act of Parliament which was obviously intended for the purpose of keeping the proprietors fully informed of the state of the accounts, and the progress of the expenditure. Had the accounts been regularly deposited with the Clerk of the Peace, so that the proprietors should have had convenient access to the accounts, there would have been an additional and very important check, and of a different kind from that provided by the Audit Office in London; a check the more required, as the works were not carried on regularly by contract; besides, there would have been this additional advantage, that the proprietors, no longer in the dark, would have been early aware of the departure from the plans and estimates, and of the necessity of an appeal to the Treasury, or perhaps to Parliament.

5 & 6 Vict. c. 89, s. 105.

It has been a further subject of complaint, that there is no appeal; that the officer in charge of the Drainage Department plans the works, executes them, judges of their success, and finally, decides every question arising out of the award. That the awards have, in many cases, been so made that the lands subject to the award let and sell for very much less than they would have done in their original state, in violation of the provision in 9 Vict. s. 1, a proviso evidently intended for the protection of reversionary interests, while, at the same time, it contributed in no small degree to give confidence to the timid, and secure their assents.

Some explanation has been given on this point, 19th Report, p. 64; but that explanation does not appear to the Committee at all to show that the complaint is not well founded.

There remains still a question, and that the most important of all: What is to be done for the future? By the Parliamentary Return before quoted, it appears that there are 12 works which have been stopped for second assents. These works were commenced under 9 Vict. c. 4, and the limit prescribed by the Act of £. 3 per acre upon the average of the whole area having been attained, and the works being still unfinished, no further expenditure can take place without the fresh assent of the proprietors.

The proprietors withhold assents, apparently preferring to subject themselves for a time to loss and inconvenience arising from the delay, and to await a

change of system, rather than to expose themselves anew to altered plans and estimates, and perhaps to an indefinite outlay. In such cases, it appears to the Committee to be very desirable that there should be an inquiry upon the spot, without delay, with the view of deciding upon a plan for completing the works to the best advantage. Such an inquiry, guided by engineering science of a high order, and by great experience in works of drainage in England, and perhaps elsewhere, would probably at once give the proprietors confidence, their assents would be obtained, and the works completed.

By the annual Reports to Parliament it appears that in many other cases second assents were given with reluctance, as the lesser of two evils. It appears to be but reasonable that inquiry should be extended to such cases, with the view of guarding, as far as may be possible, the interests of the assenting parties.

There are some cases also where the works being under the 5 & 6 Vict. c. 89, second assents were unnecessary, the power of the Commissioners being unlimited. To these the same rule applies, and perhaps to all other unfinished works of importance. It is the opinion of the Commissioners, supported by a large majority of the Irish proprietors, that the Drainage Acts require revision. The 5 & 6 Vict. was drawn up with the assistance of the Commissioner who had to work it, and no doubt the same was the case with the subsequent Acts. It seems very desirable, after what has occurred, that the information necessary for legislation on this very difficult subject should be drawn from some source independent of the Board of Works: this seems scarcely attainable, except by an inquiry on the spot, under every variety of local circumstances. The Committee are of opinion, that the whole inquiry ought to be entrusted to a Commission issuing from the Treasury, and with power to make a full and complete investigation. Looking to the magnitude of the interests involved, to the amount still to be expended in the completion of the works, and to the loss the public and individuals may sustain if the works are not completed, the subject must be allowed to be one of the greatest importance. It will appear of still greater consequence, when it is recollected that there yet remain large tracts of land in Ireland where arterial drainage, carried out with caution and rigid economy, both as to plan and execution, would be highly beneficial; but where, if carried out in another spirit, it would bring ruin on whole districts.

Lord St. German's Letter.

And the Committee have directed the MINUTES of EVIDENCE taken before them, together with an APPENDIX, to be laid before your Lordships.

29th June 1852.

MINUTES OF EVIDENCE.

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THE EARL OF ROSSE in the Chair.

SIR CHARLES EDWARD TREVELYAN, K. C. B., is called in; and, having been sworn, is examined as follows:

Sir C. E. Trevelyan, K. C. B.

4th June 1852.

1. WERE you connected with the Treasury in 1842, when the 5th & 6th of Victoria, chapter 89, the original Drainage Act, was passed?

Yes, I held my present office of Assistant Secretary to the Treasury.

2. The policy of the Drainage Acts was to encourage arterial drainage, by dispensing with separate private Acts in each case, and affording other facilities?

Yes, that was the object of these Acts; but if your Lordships will permit me, I will commence a little earlier than the year 1842, and will endeavour to give, in as few words as possible, a summary of the history of arterial drainage, which will serve as a foundation for the subsequent proceedings of the Committee. The earliest epoch to which it is necessary to refer is what is commonly called the Bog Commissioners' Report of 1809: the great specific for Irish improvement in those days was the drainage of the bogs of Ireland; but subsequent experience has shown that that is to be taken with very considerable limitations. The next important step which was taken in the matter was Mr. More O'Ferrall's Act of 1831, the 1 & 2 Will. 4, c. 57, amended and extended by the 5 & 6 Vict. c. 105, the principle of which was to execute arterial drainage by private agency, and with private funds; in short, it was an extension to Ireland of the principle of the private Drainage Acts of England, by which the Bedford Level, the Cambridgeshire Fens, and many other works of drainage, or of mixed drainage and navigation, have been carried on.

3. Those were local Acts?

Those were local Acts; this was a general Act, on the principle of the local Acts to which I have referred, enabling individuals to combine together for the execution of particular drainages, with the consent of the Lord Lieutenant, and to form corporations for the specific purpose, and to raise money on debentures, and to execute the works, and after that to provide for the appointment of trustees for keeping the works in repair, and for levying a rate for that purpose from the proprietors interested; in fact, it provided all the organization and all the powers necessary for the satisfactory execution of arterial drainage works in Ireland; this Act was brought into partial execution only in two instances, one of which was a company, which was formed according to the process prescribed by the Act, for drainage in connexion with Lough Corrib; that company was formed, and a subscription list opened; but it proved abortive, and ended in the work being undertaken on a more comprehensive plan by the Board of Works, and the Treasury authorized the Board of Works last year to compensate the former undertakers for such portion of their works as could be made available, for which purpose 5,000 *l.* was charged upon the funds provided for the Lough Corrib drainage and navigation; the other case went no further than a preliminary survey of the River Blackwater, in the county of Kildare, Mr. More O'Ferrall's own county; he was unable to induce his neighbours to combine with him, and the project fell to the ground; but when the Government plan of drainage was afterwards carried into effect, it was applied to the Blackwater, and Mr. More

Sir C. E. Trevelyan, K. C. B.

4th June 1852.

O'Ferrall's survey was then made available. These two cases represent the full extent to which Mr. More O'Ferrall's Act was brought into partial operation, with the exception of one or two small drainages executed under Grand Jury Presentments, in the manner prescribed by the 104th section of the 1 & 2 Will. 4, c. 57; it did not fail from any want of machinery or power, but apparently from the unwillingness of the parties interested to combine together under the powers of the Act.

The next step of importance was what is commonly called Mr. Lynch's Committee of 1835, which made a report containing the same general recommendations for Government Drainage and Improvement, as the Bog Commissioners had done, but no result ensued.

Then an exceedingly important step was taken, which was the foundation and immediate cause of all the measures which have since been adopted, which was the project for opening the navigation of the Shannon, and draining the adjoining lands. The primary object of that great work was opening the navigation, but it was put forward as a secondary object to improve what are called the Callow Lands, bordering on the Shannon, that is the alluvial lands adjoining the river, which ought to be valuable meadow lands, and which, properly improved, would be extremely valuable, but which in the then unimproved and neglected state of the river were annually overflowed for several months in the year, and were rendered of little value, affording only occasional pasturage, and uncertain crops of coarse grass. That was a secondary object of the Shannon works; and the Shannon undertaking was founded on a compromise between those two objects, namely, between the navigation and the drainage. The point endeavoured to be attained was, to have the greatest amount of drainage which was consistent with the improvement of the navigation. That great work was ably carried through, and, in my opinion, was perfectly successful. I do not mean that it is a perfect drainage work, or a perfect navigation work, but that it is the best compromise between the two that could have been effected, and showed how much could be accomplished when drainage only was the object. But however that may be, it furnished the model for, and gave a stimulus to all that has been done since; and it had this very important effect, that it cleared people's heads, and enabled them to understand the subject. And then it became apparent that the drainage of bogs, that is, the reclamation of new lands, which had always been the great object in former days, was not the primary object; and that the really important thing was, to open the channels of the rivers, the main outfalls of the country. The first effect of this is, to improve the adjoining alluvial lands, and convert them from the neglected, deteriorated state which I have described, to valuable pasture and meadows. A second object (which, perhaps, is even more important) is, to furnish such deep and clear main arteries to the country as will allow of detailed thorough drainage, to be carried out all over the adjoining lands. And a third object is, what has always before been considered the first object, the gradual drainage of the bogs, which, no doubt, may be reclaimed to a certain extent, that is to say, the borders and more manageable parts of them; but, as a general rule, the complete drainage of the bogs extends far into the future, and a great proportion of them will be more valuable as peat than for any other purpose, to supply fuel to succeeding generations.

The next great step was the passing of the Act of the 5 & 6 Vict. c. 89, which was passed in the year 1842, when, under Sir Robert Peel's government, Mr. Young was one of the Lords of the Treasury, Lord Eliot was Secretary for Ireland, and Sir John Burgoyne was Chairman of the Board of Works. Sir John Burgoyne had been the Chief Commissioner on the Shannon, and Mr. Mulvany had been actively employed under him. Sir John Burgoyne, with the assistance of Mr. Mulvany, brought to bear upon the extended project of arterial drainage all over Ireland the important experience which he had acquired in the execution of those great Shannon works; and upon that foundation the Act of the 5 & 6 Vict. c. 89, was passed, the plan of which, as nearly as I can recollect, was as follows. Any person interested in the opening of any navigation, or in the drainage of any lands by clearing the channel of a river, might make application to the Commissioners to have the Act applied to that navigation, or to that drainage, upon his undertaking to pay the whole of the preliminary expenses himself, in case the work should not be approved; but if the works should be finally approved and carried out, then the preliminary expenses were to form part of the charge upon the lands, and the applicant was to be relieved from them; then the Board of Works took such

such steps as they thought proper in order to form a judgment as to the propriety of proceeding further in the matter; and if they determined upon doing so, they issued what was called a preliminary notice or declaration, stating that they intended to apply the preliminary powers of the Act to that case, and to make a detailed survey. That declaration might be appealed against and controverted in the Court of Quarter Sessions presided over by the assistant barrister. Any other proprietor who took a different view, and thought that the powers of the Act ought not to be applied to the case, might bring the case before the assistant barrister, and obtain judgment upon it. That step being made good, the next was to have a detailed survey and estimate made, and a report published for the information of all concerned; and then a meeting of the parties interested was held, and the question was submitted for their decision, whether the work should be gone on with or not. Circulation and publicity were given to the Report; various notices were posted at fixed periods and places, and every precaution was taken to ensure full publicity; after which the meeting above aluded to was held of all the parties interested, and they voted on the project; and if the parties possessed of two-thirds of the land agreed to the proposal, and the Board of Works finally consented to undertake the work, then it became an approved project; and what remained was for the Board of Works to obtain the necessary funds, by borrowing, either from private parties, or from the Government, to execute the work, and after it had been completed, to hold a Court for the apportionment of the expense, and to make a final award, charging the several properties interested, in proportion to the benefit respectively conferred upon them, with the repayment of the loans within a certain term of years. I mentioned that the only legislative and governmental element of Mr. More O'Ferrall's plan was, that an organization was set up under the authority of Parliament, but that it was worked by private agency and private funds. A step in advance was made under the 5 & 6 Vict. c. 89, because under that Act the plan was to be worked by Government agency, with the assistance of responsible skilled officers of the Government; and a Government establishment, including accountants, was brought to the assistance of the plan; but the work was still to be executed by private funds; the funds mainly relied upon were funds to be obtained from private parties; and the loans from the Board of Works loan fund (that is, from the annual sum set apart to be lent under the superintendence of the Board of Works), were considered merely as a secondary and subsidiary resource. In accordance with that view, the Drainage Commissioners were made independent, to act without any other responsibility, except to Parliament and to the parties interested. The Act conferred no authority whatever either on the Lord Lieutenant, or on the Treasury, to control their proceedings.

4. Can you state on what security the advances from private parties were contemplated to be obtained?

They were to be obtained on the security of the improved value of the lands reclaimed or improved, with a reserved security upon all the lands held by the same parties to the same uses within one mile. The first of these securities had priority, to the extent of the improved value, of all incumbrances, except tithe and quit-rent, while the latter took precedence in order of date. Then, as no authority was given to the Treasury to control the Drainage Commissioners, so neither was any Government audit of accounts required. The only audit required by the Act was an annual report of their proceedings and accounts rendered to Parliament. The accounts were also required by the Act to be deposited with the clerks of the peace in the neighbourhood of each work.

5. Had not the Treasury practically a control over the Commissioners because they held their offices during pleasure?

The Treasury might have exercised that extreme power if they had thought proper; but the plan of the Act did not contemplate any such exercise of power. According to the principle and purview of the Act, all that was intended was, that the Government should lend the assistance of its scientific professional officers for this particular purpose; and that the Commissioners should execute the works as independent Commissioners, responsible to Parliament under the powers contained in the Act. I am speaking now of the original plan of the Act. Subsequently, circumstances called for great practical changes; but that was the original intention of the Act, and it will be observed, that it all hangs together.

Sir C. E. Trevelyan, K. C. B.

4th June 1852.

together. The money was to be raised by private loans. The Drainage Commissioners were under no legal control from the Treasury, and no Government audit of their accounts was required, and the only concern the Treasury had with them was, that they were empowered to lend them money if they thought proper. I remember circumstances which occurred at the time which have fixed that point in my memory. I recollect that the Act was being prepared by Mr. Young, the Secretary to the Treasury, in concert with Sir John Burgoyne and Mr. Mulvany. I understood that an Irish Drainage Act was being prepared, and I apprehended that there might be some demand upon the Treasury for money. In consequence, I inquired about it, and I was told that it was no business of the Treasury; that the Treasury had nothing to do with it; that it was intended to be an entirely independent, self-supporting plan; and when the Bill was laid before Parliament, it turned out that that was the plan of the Act. The selection of the agents to carry this work into effect is a very important part of the subject; I have preserved the original correspondence which took place at the time in the autumn of 1842, between Mr. Young, one of the Lords of the Treasury, Sir John Burgoyne, Chairman of the Board of Works, Lord Eliot, Secretary for Ireland, and Sir Thomas Fremantle, first as Secretary to the Treasury, and then as Secretary for Ireland: he appears in the correspondence in both these capacities. With your Lordships' permission, I will give in this correspondence, which is important, as showing a conscientious and anxious desire on the part of all the official persons concerned at the time to choose the fittest persons for carrying out this great work.

The Correspondence is delivered in, and read as follows:

Sir JOHN BURGOYNE, Chairman of the Board of Works, to JOHN YOUNG, Esq., M.P., Lord of the Treasury.

Office of Public Works, Dublin,
22 August 1842.

THE Drainage and Fishery Acts are now laws of the land, and I hope will prove eminently useful; they have certainly, by Lord Eliot's and your exertions, come out of the hands of the two Houses far more unobjectionable than I had believed at first could be the case.

It is now necessary to call the attention of the Treasury to the means for working them out, which I am preparing to do; but, having no intimation from their Lordships on the subject, I have no right to do more than state generally what it appears to me will be requisite.

I shall endeavour to define generally what I assume to be the intention of the part to be undertaken by the public, and what by the parties interested; and I see every reason to believe that the former may be very small for the great boon conferred on the country.

My object in writing to you now is (as I cannot presume uncalled-for to recommend persons) to express a strong conviction that both measures will be far more efficient, and worked more perfectly and economically for all parties, by introducing Mr. Mulvany as our principal agent.

He is a man of great energy and considerable talent; he has a thorough knowledge of the details of both, and considerable engineering acquirements, all of which qualities are most desirable, and I think that he could undertake both as our general adviser and director; in no other way do I see a possibility of doing with less than two; and it is the more important to dispense with a distinct office of Superintendent of Fisheries, as I should hope that, after a year or two, the Board would be little called upon to interfere.

Perhaps my writing may prevent the Treasury from making any other hasty appointments.

Sir JOHN BURGOYNE to Lord ELIOT, Chief Secretary for Ireland.

Office of Public Works, 29 August 1842.

I BEG to enclose the letter from this Board to the Treasury, explanatory of the views the Commissioners take of the probable working of the two Acts of Parliament recently passed for Drainage and Fisheries.

Your Lordship is aware of the anxiety I feel about the appointments, particularly that of the additional Commissioner or officer of the Drainage, as so much will depend upon his thorough efficiency; and perhaps you will be kind enough to urge upon their Lordships the propriety of considering well the qualifications of the person to be so appointed.

I would also request that as little delay may take place in forwarding the Board's letter to the Treasury as may suit your Lordship's convenience.

MEMORANDUM

MEMORANDUM by Lord ELIOT.

SIR John Burgoyne, I know, considers Mr. Mulvany to be peculiarly well qualified for the management of the drainage business.

Mr. Mulvany has been employed for 16 years as an engineer in the public service; he is now engaged in superintending the works under the Shannon Commission.

Mr. Mulvany helped to frame the Drainage and the Fishery Bills, and he thoroughly understands both subjects; without his assistance, I could not have carried either Bill through Parliament.

I would, therefore, strongly recommend his appointment as Commissioner of Drainage.

2 September 1842.

Sir THOMAS FREMANTLE, Secretary to the Treasury, to JOHN YOUNG, Esq., M. P.

Treasury, 30 September.

I RETURN Sir John Burgoyne's Letter, in anticipation of your return to London. I resolved, by Mr. Goulburn's advice, not to make any appointments under the Drainage and Fisheries Bills till I had an opportunity of talking to you on this subject.

It seems doubtful whether Sir John Burgoyne recommends Mr. Mulvany as the Commissioner to be appointed, or whether he proposes that he should be a sort of superintending agent under the Board of Works.

I am inclined to think that one of two Commissioners should be nominated, and that the Government should have what little patronage may arise from carrying these measures into effect.

Sir THOMAS FREMANTLE, Secretary for Ireland, to Mr. GOULBURN, Chancellor of the Exchequer.

Dublin Castle, 30 October.

I AM desired to request that you will consent to appoint Mr. Mulvany a Commissioner of the Board of Works for the department of the fisheries, in pursuance of the powers vested in the Treasury by the Fisheries (Ireland) Amendment Bill of the last Session of Parliament. Mr. Mulvany has been employed as an inspector of fisheries under the former Act, and, having made himself intimately acquainted with the details of the Irish fisheries, I consider that he is the fittest person to fill the situation. He is also an officer of good character, and of much zeal and activity, and he has been recommended by Lord Glengall, Lord Dunraven and other persons in this country, who are desirous to promote the extension of the fisheries on the Irish coasts.

I enclose a memorandum sent to me on this subject in June last by Sir ohn Burgoyne, but as he soon after resigned his appointment as Chief Commissioner of the Board of Works, I was unwilling to act upon it until I had an opportunity of consulting the wishes of his successor. You will find that Colonel Jones concurs in the recommendation and arrangements of Sir John Burgoyne.

I send also a letter from Lord Glengall, which was received this morning by Lord Heytesbury, once more urging upon the Government the consideration of this question.

I trust that, under these circumstances, you will appoint Mr. Mulvany, and authorize the Board of Works to select another person to be an inspector of fisheries in his place.

It is indispensably necessary that not less than two inspectors should be constantly employed, as they have to attend not only to the deep sea and coast fisheries, but the salmon fisheries of the rivers in the interior of the country, and I concur with Lord Glengall, that with some more assistance from the Fishery Board, additional sources of employment for the people may be opened.

I shall be obliged by your returning to me the enclosed letters when you have decided this question.

I postpone the consideration of the salary of these officers until the estimates for next year are in course of preparation, when the whole question can be brought before you. It is really an object to have these appointments made without delay.

Dublin Castle, October 30.

6. Was it not the fact that, at the time when Mr. Mulvany was appointed, that Act had scarcely come into play, and the operations appeared to be likely to be on a very small scale?

He was appointed at the very commencement, before the Act had come at all into operation.

7. And his appointment was made upon Sir John Burgoyne's recommendation?

Sir John Burgoyne had had experience of him in the Shannon, which induced him to give a decided recommendation in Mr. Mulvany's favour.

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8. Are you aware whether Mr. Mulvany had ever been employed upon any large drainage work before he was appointed?

I am not aware of his having been employed upon any drainage work, except the Shannon works; he may have been, but I am not aware of his having been so.

9. Are you aware of his having been employed in conjunction with any English engineer?

I am not aware of his having been so employed.

10. At the time of his appointment, was any system established between Mr. Mulvany and the Board of Works, or between the Board of Works and the Treasury, apportioning the nature and extent of the duties that were to be carried on by the Drainage Department and by the Board generally?

There was no arrangement beyond that prescribed by the Act. The Act authorized the appointment of two Commissioners of Fisheries and Drainage, and it was understood that those additional Commissioners were to confine themselves to those objects; in fact, by the nature of their appointments, they were confined to those purposes. They were appointed in addition to the previous establishment of the Board of Works, for the express purpose of carrying on the drainage and the fisheries. They were to do this under the superintendence and check of their colleagues, and especially of the chairman.

11. Was it not understood that there was to be a general control and check exercised by the whole of the Board over the proceedings of those two special Commissioners; and above all, that the chairman of the Board was to have united power with them, and to be subject to the same responsibility?

At that time no powers had been conferred upon the chairman different from those possessed by the other members of the Board, but from the nature of his appointment he had practically superior authority. Those two Commissioners for Drainage and Fisheries were to be appropriated to the specific objects for which they were appointed, acting in concert with the other members of the Board, and, as acting in concert with them, of course under their check and control.

12. Therefore, are the Committee to understand that they were selected for those peculiar functions connected with the control and administration of those respective departments; but that they were to act under the cognizance and control of the Board generally?

Yes, with the cognizance of and in concert with them.

13. Subsequently, the responsibility seems to have been placed by the Treasury upon the chairman?

Yes, at a subsequent period. I will proceed with my narrative. The original Government system of drainage appears to me to have been a very complete system; it provided for a full previous investigation and survey and estimate, and when those necessary preliminaries had been completed, then full powers were conferred upon the Board of Works, acting as Drainage Commissioners, to complete the work, and not only to complete it within the estimate, but, if necessary, beyond the estimate. It will be found that the Act contains specific powers to make any deviation they may think proper from the original plan and estimate; and it is quite right that it should be so, because, although the actual possessors of the estates, the tenants for life (to use the legal term), are trustees both for themselves and for those immediately dependent upon them, and for the various annuitants and creditors of the estates, yet, when they, with a full knowledge of the powers contained in this Drainage Act, choose to hand over their interests to the Board of Works, to be dealt with by them according to the powers contained in the Act, then the Board of Works become trustees, not only for the interests which I have described, but for a new interest created by this very circumstance, namely, that of the persons who lend money under the Act. Thus the Board of Works become charged with a trust of the highest consequence, and it is both reasonable and just that they should be invested with full power to enable them to discharge that trust; and it is the more reasonable, because of the great boon conferred on all the interests concerned by lending for this purpose the scientific and other public officers and establishments of the Government.

14. And

14. And also in certain cases by advancing public money?

Yes; but in that respect the Treasury was on the same footing as anybody else; they did not lend unless they had good security.

15. If the Board were intrusted with these great powers, do you not think that they were bound to be guided by the definition which they had given, both as to the preparation of the estimate of the cost, and as to the calculation of the increased value to arise from the work which was to be laid before the proprietors, before they consented to call those great powers into play; the definition of the estimate being as follows: "With respect to estimates, our instructions to the engineers are, to include every item of expenditure likely to arise, and to take especial care that the amount shall be sufficient to complete the works in the plainest, but, at the same time, in the most substantial manner, for which they are held responsible; and before we finally sanction any undertaking, we adopt every reasonable precaution to assure ourselves that the works may be executed within the estimates;" do you conceive that the Board were bound by that definition in their subsequent proceedings?

I conceive that the Board were bound to obtain the most complete preliminary information in their power, and that, having obtained it, they were bound to be guided by that information, as far as it was applicable; but if, in the course of the execution of the works, new circumstances arose, or were brought to light, which had not been foreseen and included in the preliminary information obtained, then it might become their duty to deviate from the original plan, and to go beyond the original estimate, and to do the best they could for all the persons interested under the new circumstances which had arisen. As I mentioned before, I conceive that as soon as the preliminaries had been gone through, and the Board had been intrusted with the execution of a drainage project, with the full consent of the tenants for life, the representatives of the estate, they, the Board of Works, then became trustees, and were bound to do the best they could for the estate under the circumstances; and if the circumstances were such that the sum provided by the original estimate became exhausted before the work was completed, it might then become their duty to complete the work, although the expenditure was in excess of the original estimate; for if, after the sum included in the original estimate was exhausted, the work was stopped for want of further funds, the money expended might have been wholly or partially wasted, and it might be obviously for the benefit of all the parties concerned that further expenditure should take place to complete the work, in order to render profitable all that had been previously expended. I will take the worst case that can be supposed: I will suppose that the original estimate for a work was 10,000 *l*, and I will suppose that that sum had been expended, but that the work was still incomplete; new circumstances had been brought to light, owing to which the original estimate was found to be insufficient: if the work stopped after the expenditure of the 10,000 *l*., the whole of the money might be thrown away. It might not yield a quarter per cent. return upon the money; but the expenditure of another 5,000 *l*., or even of another 10,000 *l*., to complete the work, might make the whole productive; and if it were made productive to the extent even of one per cent., it would be for the advantage of all the parties concerned. I recur to my original position, that although it was the duty of the Board of Works to form the best preliminary estimates in their power, and to be guided by those estimates, so far as they were applicable, still they had a higher duty, which was to act according to circumstances for the benefit of all the parties concerned.

16. Do you think that in such a case as you have put hypothetically, it would have been their duty so to act, in their opinion, for the benefit of all parties concerned, without obtaining from the parties so concerned an approval of what they intended to do?

I think that it was due to all parties concerned to keep them informed of what was in progress, and to consult their wishes as far as possible; but if the Board of Works saw reason to differ in opinion from the parties immediately interested, then I think it was the duty of the Board of Works to carry out their own opinion, although in opposition to those of the tenants for life, because the Board of Works were vested with a high trust; they had obligations to perform, not only to the tenants for life, but to all the other parties interested in the estate, whether annuitants or creditors to the estate, or creditors to the works, so that if, in deference to the wishes of any one class of parties concerned, they had refrained from completing

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pleting works which, in their opinion, ought to be completed in justice to all the parties concerned, I think they would have failed in their duty.

17. But were not they specifically and primarily trustees for the parties who had immediately contracted the obligation for this work, and could it be held consistent with the execution of that trust, that assuming, for example, that the parties had contracted a debt for 10,000 *l.* for the execution of a certain work, they, the trustees for executing that work, should saddle them with a debt of 20,000 *l.* without their assent?

I think that if, in the judgment of the Board of Works, it was clearly for the interest of all the parties concerned in the work, including the creditors to the estate and the creditors to the work, and the dissenting proprietors, whose interests should be as much attended to as the interests of those at whose instance the work was undertaken, that the work should be completed, it would be the duty of the Board of Works to complete the work, even against the opinion and wish of the tenants for life.

18. But supposing a case in which an individual had contracted an obligation for a drainage work to the amount of 5,000 *l.*, however it might be for his interest, and for the interest of those who were concerned in the estate, to have it executed at the expense of 10,000 *l.*, yet, if he had not the means of meeting that pecuniary engagement of double the original amount, is it consistent with the principles of justice that that should be cast upon him by the mere act of others over whom he has no control, contrary to his expressed wishes?

Yes, I think it is, because the proprietor, interested to that extent, gave his consent to the Board of Works undertaking the trusteeship of the work, with a full knowledge of the powers contained in the Act, one of which is, that the Board of Works are vested with the legal power of making any deviation that they think proper, either from the plan or from the estimate originally made and proposed.

19. Do you consider that to be a just construction of the Act, that it vested in the Board of Works an unlimited power of deviation, and an unlimited power of adding expense to the parties?

That was the plan of the Act, and it was an indispensable condition of the system; the Government cannot undertake, through its officers, the execution of works of a profitable character, or of any character, without being intrusted with full powers to complete those works, and full powers were accordingly given by the Act; and the proprietors consented to the Board of Works undertaking those works with a full knowledge that those full powers had been conferred upon the Board of Works for the purpose. The 53d clause of the Act authorizes the Board of Works to make any deviation they think proper from the original plan of the work, which involves any additional expense which may be rendered necessary by such deviation.

20. Viewing, practically, the construction that would be put in the interpretation of Parliamentary language upon the word "deviation," as applied to ordinary contracts, do you think it can be properly understood as giving more power than the just and necessary latitude for carrying into effect the original plans and designs, with such deviations as in the progress of the work might be found essential for the purpose, and should you think that it would give authority for the adoption of what, practically speaking, was a new work greatly exceeding the original work, and above all, differing with respect to the pecuniary responsibility of the landowners from the first work to which they had originally consented?

The words of the Act must be interpreted by the subject-matter of the Act; now, it is notorious that of all engineering works, river drainage works are least capable of an exact estimate. Although they were described in official language as separate works, many of them were a series of works extending for 20, 30 or even 40 miles, involving a concatenation of works; so that they might, each of them, be divided into numerous works; and it is well known that river drainage work, from its nature, and the casualties to which it is liable, is very incapable of an exact estimate; therefore, when the Legislature prescribed the condition, that the Board of Works, as the trustee and agent of these undertakings, should make any deviations which they thought proper from the original plan of the work, Parliament must have contemplated those deviations which

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it is well known have frequently to be made in works of this nature, and they are sometimes large deviations. Another circumstance is this, that it is no small matter for the Government to step beyond its ordinary functions of protecting life and property to undertake to do a portion of the business of private society; this is business which is done in England and Scotland by private individuals, or associations of private individuals. The Government was induced in Ireland to give their assistance for the transaction of this kind of business; but in giving this assistance, it did not act as the servant of the proprietors, but as their trustee, and not only theirs, but as the trustee of the dissenting minority, the debenture holders and all the other interests concerned; and it was indispensable, both for the character of the Government, and also for the satisfactory execution of the works, that the Government should be invested with full powers, and should not be liable to the various contingencies arising out of individual dissension and difference of opinion.

21. You are doubtless aware that the great works of the Caledonian Canal, and the whole system of Highland Roads and Bridges, were, long anterior to the commencement of the Board of Works in Ireland, conducted at the public expense, in some instances aided from the public funds, and in others altogether paid for at the public expense; and you are no doubt aware, that with reference especially to those Highland Roads and Bridges, it was stated in evidence by the late Mr. Telford, that they had been the cause of advancing the improvement of Scotland a hundred years; how do you reconcile those facts with the statement that those duties have not been performed by the Government in any case except in Ireland?

I was speaking of general rules. The cases alluded to in the question are exceptions. The Caledonian Canal was a great work, which was undertaken for state purposes, and the Highland Roads and Bridges were originally made more from political than from economical motives. They were commenced before the year 1745, with the object of establishing the authority of the Government amongst the Highland clans, and they have been continued partly with reference to other objects. But I do not wish to be understood as disputing the propriety of the Government interfering in the way in which it has interfered in Ireland. I was merely endeavouring to explain the conditions on which alone, as it appeared to me, it was possible for the Government to interfere; namely, that in going out of its way to do a portion of the business of private society, it should be invested with full power to complete that business, and not to leave it in an unfinished state; and especially that it should be invested with full power to protect all the various interests concerned.

22. The question just now put had reference merely to the matter of fact, whether or not, looking at the Parliamentary proceedings, and at the sums at various times voted in Committees of Supply, there are not many instances to be found in Great Britain as well as in Ireland, when the duties which you describe to have been entirely cast upon private society have been as a matter of fact discharged by the public?

In England, for the business of private society to be done by private society is the *rule*, and for the Government to do that business is the *exception*; and the exceptions of this nature are extremely limited. In Ireland, for the Government to do this class of work is the rule; for individuals to do it is the exception. To take this case alone: the Government has been induced in Ireland to undertake to carry out arterial drainage works in all the counties in Ireland, and on almost every river and stream in Ireland. There is hardly a barony in Ireland which was not included in the works undertaken by the Government, or which the Government was pressed to undertake for arterial drainage alone. Then, under the Land Improvement Act, the same principle, in a modified and more limited shape, is carried out, that of thorough draining the whole of Ireland.

23. In what respect does the thorough drainage system of Ireland, as carried on under the Land Improvement Act, differ from the mode in which the improvement of the land is by an analogous Act carried on in Great Britain?

It differs in this respect, that in Great Britain the money is in the first instance advanced by the individuals concerned; in Ireland it is intrusted to the disposal of the proprietors from the first by the Government.

24. Does not the difference consist in the first instalment being advanced,

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subject to account and responsibility on the part of the public officers in Ireland; whereas, in England, the first instalment is made by individuals; is there any other difference?

I believe that is the main difference.

25. You have stated that in Ireland it is the rule, whereas in England it is the exception, that works of this description should be undertaken by the public, and not by individuals; how is it consistent with that statement, that up to the year 1831, when the Public Works Act first passed, with the exception of a few cases of particular distress requiring interposition, from the days of Queen Anne these public works were all discharged locally in Ireland, and at local expense, and that it is only in subsequent times that an interposition of this sort has been to any extent resorted to?

It is quite true that the interference of the Government with the business of private society in Ireland has greatly increased of late years. Till about 20 or 25 years ago the Irish country gentlemen made their own roads, and did their own county business; but of late years there has been an increasing tendency to throw it upon the Government. I have alluded to two classes of works which are done either wholly or partly by the Government; but there are several others. A great part of the roads in Ireland are made with sums of money advanced by the Government. The greater number of harbours in Ireland, both small and great, are made by Government officers; and advances are made for erecting all public county buildings, court-houses, and lunatic asylums, and other buildings.

26. In those cases of advances for such works as you have described, has not the repayment been made from Ireland with peculiar punctuality, as appears upon the records of the Treasury itself?

Yes; the payments have generally been made with great punctuality.

27. Take the case of the extension of the accommodation in gaols: if the repayments are made with punctuality, have not the public at large a deep interest in seeing that establishments so intimately connected with the administration of justice are erected upon good plans, and are carried out altogether in a manner that will be conducive to the public welfare?

The public has a great interest to that effect; but the habit of depending upon the Government for the execution of those classes of works to which I have referred is a bad habit; but whether good or bad, there can be no doubt that the same works are executed in England by the county magistrates, and not by the Government.

28. Was it not the same habit which Mr. Telford described as having been the means in Scotland of advancing the improvement of the country by a hundred years?

I have no doubt that the interests of the Highlands have been very much advanced by the execution of roads and bridges under the superintendence of General Wade originally, and after that, of the Highland Roads Commissioners. Whether the state of society in that part of the United Kingdom has not now outgrown the necessity of that special assistance and interference is another question. I may mention, with reference to a former question, that in England, the Public Works Loan Commissioners have the power of lending to county and municipal and other public bodies; and such public bodies, in common with all other bodies and individuals, borrow either from the Public Works Loan Commissioners, or from private individuals or companies, as they consider most for their interest; whereas, in Ireland, all loans to county bodies are from the Government.

29. Are you aware whether the state of the law is not such with respect to building a gaol in Ireland, that you may borrow the money required from the Government, but that you have no correlative power of borrowing the money from individuals?

I am aware of that state of the law, and I think it is very desirable that it should be altered, and that the county bodies should be enabled to go into the market to borrow money, wherever they can get it cheapest.

30. Returning to the point you set out with, do you conceive that, after the proprietor has called into operation the provisions of these Drainage Acts, the Board of Works may do, in fact, what they please; that they may extend the works as they think fit, and incur any expense they think fit?

That

That is the legal power vested in them by the Act, but it is a very responsible power, which ought to be exercised only on full information, and with great discretion.

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31. Does not it appear that the Legislature, in contemplating a case very much of the same kind, has taken a very different view of it: for by one of the provisions of the Summary Drainage Act, as soon as the expense incurred amounts to 3 *l.* an acre, the Board of Works are not allowed to proceed any further, without again applying to the proprietors for their consent?

Hitherto I have been speaking only of the original plan of the Drainage Act; if I may be permitted, I will go on to describe the deviations subsequently made from that plan, of which the provision mentioned in the question was a necessary consequence. I described the plan of the original Drainage Act, the 5 & 6 Vict. c. 89, which was passed in 1842. The applications made for works to be executed under that Act, between 1842 and the commencement of the famine in 1845-46, were few, and they were proceeded with very deliberately, according to the forms of the Act; the only cases I recollect are the Blackwater Drainage, in the county of Kildare, upon which a survey had been made under Mr. More O'Ferrall's Act, which was made use of in applying the powers of the Government Act to that case, and the Borrisokane district and the Ardee district; but even supposing there to have been more cases, they were proceeded with in the regular course, in a deliberate and, as far as I know, satisfactory manner: then came the great famine of 1845-46, and there arose a cry for reproductive works, and these arterial drainage works were looked to by the whole of Ireland as the most useful and important class of reproductive works, and the Government was strongly urged to take the matter into its own hands, and to proceed to execute the great arterial drainage works of the country, without any reference to the proprietors, on its own responsibility; but the Board of Works very properly reported against that course, and determined only to go the length of modifying the Drainage Act, and giving it a more summary character, so as to accelerate the proceedings under the Act, to enable them to meet the emergency of the time. The changes which were made were, as well as I recollect, as follows. Under the original Drainage Act, a person making an application for the powers of the Act to be applied to a particular case, had to pay the whole of the preliminary expenses, if it should be determined not to proceed with the work: under the Summary Proceedings Act, which was passed to modify the Drainage Act, to suit the emergent circumstances of the famine, that obligation was dispensed with; and the sum of 10,000*l.* was appropriated for the purchase of tools and other preliminary expenses; and another sum of 5,000*l.* per annum for the purpose of making advances for the preliminary proceedings. Then the detailed survey and estimate were dispensed with, and a summary survey and estimate were substituted. Then the periods for the issue of notices were shortened; and another important change was, that, instead of the consent of the proprietors of two-thirds of the land to be drained being required, the consent of the proprietors of one-half was rendered sufficient. When the undertaking had been brought to this stage, the ordinary full powers of the Board under the former Act took effect as in the original Act, so that the acceleration under the Summary Drainage Act was in the preliminary proceedings which preceded the consent of the proprietors and the final undertaking of the Board of Works to execute the work; after which the Board of Works became vested with the same full powers for the completion of the work, subject to this limitation, which was introduced, at the instance of the Board of Works itself, as a counterpoise to the summary character given to the early stages of the undertaking, namely, that they were not to expend more than at the rate of 3 *l.* an acre, without again calling a meeting of the proprietors, and taking their decision as to any further expenditure.

32. Does not that provision involve a very important principle; does it not show that the Legislature thought, that in the event of a large expenditure being incurred, or in the event of what perhaps would be a still stronger case, namely, a total departure from the original plan and estimate agreed upon, the proprietors should be again consulted?

This provision was not contained in the original Act; it is therefore to be presumed that it was not considered to be required by the circumstances of the original Act. As I mentioned, the original Act provided for a very detailed and deliberate previous survey. It was assumed that when that survey had been gone

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through, and the consent of the proprietors and the Board of Works had been obtained, then the Board of Works might safely be intrusted with full powers to complete the works, without any specific limitation as to the amount. But, under the Summary Proceedings Act, the power of previous deliberation and inquiry was very much curtailed; a summary survey and estimate, which was all that the emergency permitted, was substituted for the detailed survey and estimate; but as that seems to have been considered by the Legislature as an insufficient security, this additional check, that no more than 3 *l.* an acre was to be expended without a second reference to the proprietors, was introduced into the new Act, which was passed for one year, and subsequently renewed for another year and till the end of the then next Session. It was expected that the emergency would soon cease; and it was thought sufficient to carry the expenditure to 3 *l.* an acre, and then make a second reference to the proprietors. It appears to me, therefore, that the second assent is applicable to the circumstances of the new Act, but that it was not applicable to the circumstances of the previous Act.

33. You have mentioned that the Commissioner of Drainage held a subordinate position under the Shannon Commissioners, under whom he was employed as a surveyor, or in some other inferior capacity; now, do you think that if the landed proprietors had taken the view which you take of the power of the Board of Works with reference to these drainage operations, they would have consented to place their properties at the disposal of a person who, though highly respectable, at the same time was not in that position that people would be disposed to place that amount of confidence in him?

The proof that they would be disposed to do so is, that they actually did it. The parties interested in those works in Ireland know as well as any Member of the Committee what the real position of Mr. Mulvany is in reference to the Board of Works, and what is the degree of control and authority exercised by him over the works; and they also know what power is vested in the Board of Works, and, consequently, in a great degree in Mr. Mulvany, under the Act; and, in the face of all this knowledge, they actually handed over and intrusted their interests to be dealt with by the Board of Works and Mr. Mulvany under the powers of the original Act in the first instance, and of the Summary Proceedings Act in the other instance.

34. Does not that entirely assume that the landed proprietors of Ireland put the same wide construction upon the word "deviation" which has been put by the Board of Works, and by yourself in your evidence?

In my opinion, that construction is the just and obvious construction (arising from the nature of the work) of the words referred to, taken with the context, and the subject-matter of the Act; that is, that the peculiar nature of the drainage works, which are less capable of accurate estimate than almost any other, necessarily leads to the inference that the large construction of those words is the true construction.

35. Supposing that, under an Act for improving the Crown property, the Commissioners of Woods and Forests had the power of executing a certain work upon a certain estimate, subject to the authority of the Treasury, would you, as an experienced officer of the Treasury, have construed the word "deviation" as extending to an entire alteration of the original plan without any other authority for it, or to a deviation in point of cost, which would have involved a double amount of expenditure?

It depends upon the nature of the work. It is difficult to form the case stated in the question into an analogy with this case. The Woods and Forests are a subordinate Board to the Treasury, acting under instructions from the Treasury. But, in order to make the case parallel, we must suppose that the Board of Woods and Forests has had intrusted to it a certain specific work, with very extensive independent powers. We will suppose that it was intrusted with the execution of a harbour. We will suppose that the Board of Woods and Forests took every practicable precaution in order to obtain accurate plans and estimates for the work, and that after having done all it could do for the purpose, it turned out that when the harbour came actually to be made, a different construction of it would be required, as frequently happens in such works; that the breakwater, for instance, instead of inclosing a more limited area, required, from the nature of the tides or other causes, to be extended further, and to embrace a larger area. Then

Then if the Board of Woods and Forests had been intrusted with full powers to execute the work, including any deviation which they might consider necessary from the original plan, I say, that it would be their duty to complete the work, not according to the original plan, but according to the enlarged plan which their practical experience, acquired during the progress of the work, had shown to be necessary.

36. Would you not feel it your duty, as an officer of the Treasury, to call upon them in the first instance to report that fact to you, in order that the Treasury, as having the supreme control of the finance of this country, should exercise its discretion whether the extended plan should be adopted or not; is not that the usual course with respect to Government expenditure both abroad and at home?

Certainly.

37. If the contrary course were taken, and it were found, taking that very just analogy of a breakwater, that it was necessary to inclose double the amount of water, and to expend double the amount of money which had been originally proposed, should you not think that the Board of Woods and Forests would be acting inconsistently with their duty if they undertook without your consent, upon their construction of the word "deviation," such an entire departure from the original plan?

Yes, I should think that they acted improperly in completing the work according to the enlarged plan without first referring to the Treasury for their sanction. But, as I mentioned before, the Board of Works, in its capacity of Drainage Commission, was constituted by Act of Parliament a Board acting quite independently of the Treasury; and, on examining the Drainage Acts, it will be found that the only reference they make to the Treasury is first as to the appointment of the officers, and next as to the lending of public money on the same footing as the loans obtained from private individuals; but the Treasury has no general power of control whatever.

38. The question did not refer at all to any supposed imputation of neglect on the part of the Treasury in not controlling the Board of Works, but it related to the conduct of the Board of Works itself in the construction which it appears to have put upon the word "deviation," carrying the meaning of that word infinitely beyond what would appear to be its ordinary import and construction?

But if it be the fact that the Board of Works in its capacity of Drainage Commission was an independent Board, and that it was not required by any legal provision or other sufficient authority to report to the Treasury, it would then have been fully justified in carrying out and making such a deviation as has been spoken of.

39. Supposing a sum to be granted by a vote in the estimates, or by Act of Parliament, of, say, 100,000 *l.* for a specific purpose, and the Treasury have to act under that vote or under that Act of Parliament; would the Treasury, without coming again to the House of Commons, be authorized in expending double that amount of money?

Certainly not; but this was not a case of public money; it was the case of a machinery set up on the self-supporting system. The Government only furnished the organization, and set up the machinery, which was intended, according to its original plan, to work by itself. The money to be employed was not to have been public money, but money borrowed from any parties who chose to lend it. It was contemplated that it would all be lent, or nearly all, by private parties. A considerable sum, about 150,000 *l.*, was lent by private individuals at first; and, although it is true that power was given to the Treasury to lend money, yet it was merely as controlling the application of the loan fund which had been already provided by Parliament for the extension and promotion of public works in Ireland; and it was the business of the Treasury to see that full security was obtained for the money, and to take such precautions as they would take in lending to anybody else.

40. The question is not affected by the quarter whence the funds are derived; but the question is, if the Board is authorized or ordered to expend a certain sum for a certain object, do you consider that the Board or body is justified in spending double that amount, upon the ground that the object will not be attained without the expenditure of double the money, without any reference to the source whence the authority is derived?

What I submit to the Committee is, that, according to the original plan of the

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Drainage Act, the Board of Works was neither authorized nor ordered either to borrow or to expend any specific sum whatever; it was an independent Board, acting by an independent authority, without any reference to the Treasury, except in the case of their wishing to borrow from the Treasury, in addition to private loans obtained by them. Then they came to us, not in the capacity of a subordinate Board, but merely in the capacity of borrowers. All they had to do was to apply for money from us on such terms as they thought proper; and all we had to do was to see that we had proper security for our money, and that it would be as much for the public interest to lend to them as to anybody else. That was our sole connexion with the Board of Works in its capacity of Drainage Commission.

41. But you seem to have exercised authority over the Board of Works, as appears from the correspondence, nearly from the beginning till the present time?

We exercised no authority over the Board of Works in its capacity of Drainage Commissioners till some months after the breaking out of the famine; then circumstances forced it upon us, which I will proceed to detail to the Committee. As I before mentioned, a great cry arose in Ireland, upon the breaking out of the famine, for reproductive works; and arterial drainage was looked to as the most unexceptionable of reproductive works; and an Act was passed, the Summary Proceedings Act, with the express object of making the arterial drainage machinery applicable to the peculiar exigency of the famine. Acting under the increased powers so conferred upon them, the Board of Works commenced preliminary proceedings in all parts of Ireland, and incurred pecuniary obligations to a very great extent, far exceeding any funds which were at their disposal, and they excited expectations to a still greater extent. In those extensive proceedings they assumed that they would have ample funds at their disposal. It soon became apparent that they could not obtain sufficient funds by the ordinary process of their commission, that is, by private loans; and then they applied to the Treasury for funds, and at that point, and in that manner, the Treasury was forced to take an active part in it. A correspondence then ensued, commencing at page 110 of the printed correspondence, and ending at page 165; the result was, that the Treasury, to the extent of its power, brought the proceedings of the Board of Works, in reference to the drainage works, within limits and under control. The Treasury, first of all, directed that all preliminary proceedings should be suspended, and that they should not be resumed except upon the parties applying providing funds for defraying the whole expense of the preliminary proceedings according to the terms of the original Act. It was also directed that no new works should be commenced except in the case of the private parties interested undertaking to provide the necessary funds for completing them, not only for commencing and carrying them on, but also for completing them to the full extent, and satisfying the Board of Works that the funds would be forthcoming for completing them; and then, as regards works which had already been commenced, it provided large funds under the authority of Parliament; first, for completing works which had been commenced, or the preliminary proceedings of which had been brought to a close in the distressed districts, and afterwards for completing all works which had actually been commenced in any part of Ireland. (*See* Treasury Minutes, at pages 238, 285 and 303 of the Correspondence.) Funds were provided for these objects by Parliament. The Treasury was subsequently very much pressed to commence works in other parts of Ireland, but it has always refused to do so except on the parties providing the necessary funds. The Treasury has aimed at bringing the drainage operations back to what they were before the famine, and at replacing the system on the sound and well-adjusted system of check which existed previously to the famine; that is, that the parties wishing that a drainage work should be undertaken by the Government Establishment, should themselves provide for the expense of the preliminary proceedings, as a sort of earnest of their conviction that it was a good work, and that they should provide the necessary funds for the execution of the work. In order to accomplish those objects, the Treasury was obliged to exercise an effective control over all the proceedings of the Board of Works in their capacity of Drainage Commissioners; and one of the expedients adopted by the Treasury, in order to establish that control, was, that it made the chairman personally responsible for the proper execution of the drainage business, and placed at his disposal all the assistance which he reported to be necessary. An officer of the Royal Engineers was selected for the purpose of being inspector of the drainage works, under the immediate personal superintendence of the chairman, to communicate

by the said Acts or this Act authorized, to specify and state therein that the repayments of all sums expended in or about any such works as aforesaid shall be made either by one payment or by instalments, half-yearly or otherwise, so that in case of one payment, the amount of the same, or in the case of instalments, the amount of each instalment, with interest in either case, shall not exceed the amount of the estimated increase in the value of the land to be drained or improved, as in such award stated by the said Commissioners, for the period allowed for such one payment, or for the several periods, in the case of instalments, allowed for the repayment of such instalments respectively." What I submit to the Committee is, that notwithstanding the great disadvantage under which we labour from the diminution in the profit arising from land in Ireland since these drainage works were commenced, the Treasury has so extended the period of repayment beyond what was contemplated in the original Act, that the annual increase in the value of the land drained will, before that extended period has elapsed, repay the capital employed in the work, with interest.

62. That assumes that the value of the property is increased in every instance? Yes, it does.

63. Has it not come under the notice of the Treasury, directly or indirectly, and has it not come officially to your knowledge, that it is asserted, that not only in many instances has the land not been improved in value by the works to the extent of the money which has been expended, but that in some instances there is no increased value at all, and in many others the value has been but very slightly increased?

I have never heard it asserted in that general and positive manner; I have heard it stated that in consequence of the drainage works not being carried on simultaneously along the whole length of a river, or being stopped by the want of assents of proprietors, the lands in some parts of the river-course have been temporarily flooded; I have also heard it asserted that the proprietors find that the rents derived from the lands improved by drainage, instead of being increased, have diminished; but if there are any such instances, they are fully accounted for by the general depreciation of rents; and if the lands had not been improved by the drainage, the rents would probably have still more diminished.

64. That is, that possibly they might have been?
Speaking generally, it would be so.

65. You speak under the supposition that the land is improved by the drainage works; but has it not been reported by the Board of Works to the Treasury that the opinion of persons fully qualified to give it has been tendered to the Board of Works, upon oath if necessary, to the effect that no benefit to the extent of one-fourth part of the charge upon the land has been realized from these drainage works in a great many cases?

No; I have never heard of such a representation.

66. The Board of Works have not reported to that effect to the Treasury?

I do not say that; because very voluminous annual reports are made to Parliament; and during the famine, monthly reports were made to the Treasury; but I do not recollect any case having been reported in which it was alleged that the improved value was not equal to a quarter of the sum laid out.

67. When the officers of the Board of Works proceed to make the award upon the completion of the work, is a detailed report of the award and of the circumstances attending it made to the Treasury?

No; the award is furnished to the Treasury without any detailed report.

68. Therefore the Treasury have no means of judging whether or not the award is open to fair dispute or censure?

The award is made on the responsibility of the Board of Works as Drainage Commissioners, under the full authority conferred upon them in the original Act; but with the exception of the Owenkeagh case, the proceedings connected with which are given in full detail from page 330 to page 340 of the Correspondence, no complaints, as far as I recollect, have reached the Treasury in respect to any cases in which awards have been made; and my belief is that there is a general admission on the part of the proprietors interested in the drainage works for which awards have been made, that the works have been

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effectually executed, and have been profitable to the parties interested, according to the terms of repayment fixed by the award. We have had detailed reports, which will be found in the collection of correspondence, from the Board of Works, applying to us for permission to allow an extended period of repayment, and giving their reasons for applying for the sanction of the Treasury to the same.

69. If an objection were taken to the award, would it be competent to the Treasury to afford relief to the persons complaining?

The principle of the Drainage Act is, that skilled Government officers and a well-organized Government establishment are lent for the advantage of the proprietors interested, on the condition that those Government officers are to do the best in their power for the proprietors; and, so long as they act for the best, and do the best in their power, we consider that the proprietors are justly chargeable with the whole sum expended. If any fraud were established against the officers of the Board of Works, or any wilful neglect of duty, then it would become a personal question for investigation, as regarded the conduct of those officers.

70. Supposing the assent of a proprietor had been given to a work upon the supposition that the charge upon the land might come to from 1 *s.* to 2 *s.* an acre; and supposing the benefit conferred upon his land eventually by the work really was to the amount of about 1 *s.* 6 *d.* an acre, but that the charge put upon it by the award amounted to 8 *s.* an acre for land which cannot be let at the rate of 8 *s.* an acre; in such a case as that, if the proprietor thought that his land had had an unjust award made upon it, as compared with others, and that he had also been unjustly treated by extravagant expenditure for the works, would it be in the power of the Treasury, if he makes application, to afford him any relief?

The Treasury would investigate such a case as a case of complaint of personal misconduct against a public officer subordinate to the Treasury; but the proprietors in the case supposed handed over their interests to the Board of Works, to be dealt with by them for better or worse; and provided it can be shown that the Board of Works, in the execution of their trust, did their best, and that if mistakes were made, they were only such as a well-intentioned man under similar circumstances might make, they personally are sufficiently discharged.

71. But supposing the mistake which has been made is of another character, is it in the power of the Treasury to relieve the proprietor in such a case as has been imagined in the question from any part of that charge, or from the whole of it?

I think not: under the provisions of the Act the award is a final one.

72. It would, in fact, be useless for him to make application to the Treasury, as far as any hope of relief from the tax is concerned?

It would be the duty of the Treasury to investigate it as a personal question of the good or bad conduct of the Board of Works, but they could not alter the award. No provision is made by the Act for such a case; the Act supposes that the powers conferred upon the Board of Works will be exercised by them to the best of their ability.

73. Have you heard that, owing to the provisions of the section you have read, capitalists have been unwilling to lend to the Board of Works?

A considerable sum was lent in the first instance, about 150,000 *l.*, and loans continued to come in, but not nearly in sufficient amount to meet the greatly increased demands made for carrying on drainage arising out of the famine; and when the Government came forward with large and sufficient funds, those private loans ceased; but there are still some cases of particular drainages carried on under the authority given by the Treasury to the Board of Works to carry on drainages if the parties interested provide the funds. That is a very sound and unobjectionable system. The Government lend the aid of their skilled professional officers, and of their efficient financial and legal establishments; and the funds for the preliminary expenses and for carrying on and completing the works are provided by the private parties interested; which arrangement not only furnishes funds without any expense to the public, but also affords a very sufficient test of the conviction of the parties interested that it is a profitable work.

work. That was the original plan of the Drainage Act, and the Treasury has all through these proceedings endeavoured to bring back the operations to that original design.

74. It appears to be assumed as one of the great causes of the excess of the expenditure over the estimates that the works in all directions were stopped for want of funds. Can you account for that fact if the security was good, knowing as we do that there are very large sums in the English funds belonging to people residing in Ireland to the amount of about 35,000,000*l.*?

The interest allowed was not high; it was 4 per cent., and was subsequently in particular cases increased to a maximum of 5 per cent. But one great objection has always been made by private individuals to lending money under the Acts for drainage purposes, namely, that there was great uncertainty as to the period of repayment of the principal; it depended upon the repayments from the proprietors, and those would be made at such times as might be afterwards determined by the award, and the principal sum might come back to the original lender at inconvenient periods; it would especially come back to him by driblets under the system prescribed. We have endeavoured by some financial arrangements with the Board of Works to obviate that objection as far as possible, and have authorized the Board in particular cases to make up, out of the general balance in their hands, the sums required to repay the whole amount of a debenture.

75. But even in case of good works, which are such as ought to have been undertaken, if there was a lavish expenditure, do not you consider that, under the condition in the Act, the loan might be lost?

No doubt a work might from its nature be so unproductive, or the expenditure upon it might be so great, that the money lent for carrying it on might be lost under that clause of the Act; but if a sufficiently long time is allowed for the repayment of the loan, it is extremely improbable that there would be any work so unproductive or so expensive that the sum lent upon it would be lost.

76. If capitalists take that view, is not it very strange that when there was abundance of capital when the Board offered 5 per cent., capitalists would not take that investment in preference to getting 3½ per cent. in the funds?

We found that capitalists were not ready to come forward even during the earlier operations of the Board, when the Commissioners were proceeding with regularity and deliberation under the original powers of the Act, between the years 1842 and 1846. Indeed the first drainages were commenced, and, I think, completed (the Blackwater for instance), from loans borrowed from the Board of Works; I do not think that any supposed insecurity of the repayment of the principal arising from this cause is sufficient to account for the backwardness of capitalists; I believe it to be owing to the cause which I have mentioned, that it is a very inconvenient kind of investment for capital, and that capitalists do not like putting out their money in an investment the conditions of which are so uncertain as to repayment. The mode of repayment prescribed by the Act by driblets, in proportion as the money comes in from the proprietors, is one which is considered very objectionable by capitalists, and very inconvenient.

77. Have you ever heard that the facts which came out in a trial in Dublin, showing that the business of the Board of Works was carried on in a very loose way, contributed to deter capitalists from lending money for these works?

It may have so contributed; but great efforts have been made for a series of years to improve the financial system of the Board of Works; we have established every practicable check, and the public ought by this time to be convinced that there is no necessity arising from the want of proper financial superintendence.

78. But supposing it to be a notorious fact that in many parts of Ireland the rate charged for arterial drainage amounts to very nearly or quite as much as the letting rent of the land upon which it is so charged, considering that there are, besides, poor rate, tithe, county cess, and such charges to be levied upon the same land; is it not, in point of fact, rather a bad security for persons to lend upon?

The letting value of land in Ireland must be extremely small if the drainage repayments equal the amount of the rent, even after deducting the charges

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mentioned in the question. It will be seen on reference to the drainage awards, that the annual instalments are generally very moderate, and in a great many instances ridiculously small. The amount to be repaid by the individual proprietor is in numerous instances (so numerous as to require a particular administrative provision) so extremely small that it is not worth while to require payment of it every year; and the Treasury has authorized the Board of Works in such cases to apply for the repayment only once in three or five years.

79. Has it come to the knowledge of the Treasury, directly or indirectly, that land in Ireland has been charged by award, in the course of the last year, 8*s.* an acre, for which the Poor-law valuation was under 8*s.* an acre?

I never heard of the case. I must mention, that the value of land in Ireland is improving, and is becoming every year more productive. Ireland has gone through an ordeal which will give a new and greatly increased value to land; it is every year recovering from the effects of the famine; and the ultimate effect of the famine will be greatly for the benefit of Ireland.

80. Were the Treasury aware that these works in all directions were exceeding the estimates; and that the Board of Works were changing the plan and scale of the works without communicating in any way with the proprietors?

The case to which the question refers is that of complaints made with reference to particular drainages. When complaints have been made to the Treasury that the Board of Works were exceeding their estimates and altering the original plans, the Treasury has taken such steps as it thought proper to investigate those cases. The Treasury did become aware that the Board of Works, in numerous cases, were exceeding their estimates; and it will be seen in the correspondence that we have taken the most effectual steps in our power to require revised and complete estimates, and to fix the Board of Works to those estimates.

81. Does it not appear that there is but one case in the whole of the correspondence in which the Board of Works convened the proprietors before they altered the plan?

I would suggest that Mr. Griffith, the Chairman of the Board of Works, should be examined as to individual cases.

82. There is another cause assigned for the excess of the expenditure beyond the estimate, namely, that the works were executed as relief works: do you conceive that the Board were perfectly warranted in executing these private works as relief works at a disadvantage, without the sanction of the proprietors?

In using the word "disadvantage," I presume it is intended to mean *comparative* disadvantage; for it may be assumed that the proprietors would not have applied to the Board of Works to execute the works, unless they had supposed that, all things considered, it would be for their advantage that the works should be executed. The Board of Works undertook no works which were not pressed upon them by the proprietors, and approved by the proprietors according to the legal forms.

83. And according to a certain estimate?

But subject to any deviation from the estimate that they might think necessary in the progress of the work as laid down by law.

84. Do you think that the Commissioners had a right to allow considerations of charity to affect them, in resolving upon those deviations, whether you apply that term to the work adopted, or to the amount of payment, or to the quality of the labour employed?

I am not aware that they resolved upon any deviation from considerations of charity. The deviations from the original plan ought to have, and I believe had reference only to the greater completeness of the work. But in urging upon the Board of Works the commencement of that large number of drainage works, the proprietors were more or less influenced by considerations of charity; that is to say, a great calamity had fallen upon the land, and the general opinion of the landed proprietors of Ireland was, that the best mode of relieving the distress caused by that calamity was by reproductive works, which, notwithstanding the disadvantages connected with the famine, would repay their cost, and that the execution of them should be set forward. The Board of Works in setting forward those works was merely yielding to the pressure that was put upon them by the landed proprietors. The undertaking of those works was really the act, not of the

the Board of Works, who were merely ministerial, but of the proprietors themselves, who pressed them upon the Board.

85. Take the cases of those projects of drainage which were commenced before the famine; do you think it was just to burden with debt those small proprietors whose properties were in many cases much involved, and to victimize them for the purpose of affording relief to three or four unions?

The works commenced before the famine were very few, and very limited in number; and although the proprietors interested in those works had generally consented to the execution of the works before the famine, yet I have no doubt that it will be found, when the members and officers of the Board of Works are examined, that the pushing forward those works during the famine was very much pressed upon them by the parties interested in the works; those works formed a decided exception to all other works in progress at the time in Ireland; the cases were much more numerous in which the preliminary proceedings were commenced before the famine, and the Board of Works was proceeding deliberately with the preliminary proceedings; the famine found a great many such works in their incipient state; the preliminary proceedings had not been completed; and there was an immediate pressure on the part of the parties interested to push forward this drainage under the Summary Drainage Act.

86. Do you think that the Board of Works were justified in doing that without convening the proprietors again, and telling them that the circumstances were greatly changed, and that the works would cost a great deal more than had been estimated, and probably would not be remunerative?

The great majority of the works undertaken by the Board of Works had not reached the completion of the preliminary proceedings at the commencement of the famine; now, the last stage of the preliminary proceedings is the meeting of the proprietors to give their final assent to the execution of the work; and I believe it will be found that the works to which the proprietors gave their final assent previously to the famine are very few: looking down this list, I find that the great majority of original applications were in 1846; there are two in 1843, and some in 1844, but most of them are in 1846. The principle of the Act, that the works should be executed by private money, was still acted upon, as a general rule, at that time; even with respect to those cases in which the original applications were made previously to the famine, I think it will be found that the meeting of the proprietors to give their final consent was subsequently to the famine.

87. Has it ever been reported to the Treasury that there was any intimation given to the proprietors that the works would be carried on at a disadvantage in consequence of the circumstances attending the famine?

The intimation was all on the side of the proprietors; the state of the case was, that there was a great pressure from all sides upon the Board of Works to carry on those works, notwithstanding the famine, and the disadvantages arising out of it; there was a very great demand for reproductive works, and, more than any, for arterial drainage works, because they had been already commenced in some quarters; the famine found the system well established, and an Act was passed, with the full consent of the Irish Members, for accelerating the process under the previous Act, and making it more summary; therefore it was needless for the Board of Works to give any intimation to the proprietors that those works, if carried on during the famine, would be less profitable than if they were carried on under ordinary circumstances. They were pressed upon from all quarters to carry them on, because of the famine, partly on account of their profitable nature, notwithstanding the famine, and partly in order to give employment and help the people.

88. Take the case of any individual proprietors, whose properties were all included in one area of drainage; do you think it at all likely that if they knew how the facts were, they would have consented to have become parties to carrying on works to support the population of perhaps a union?

I am satisfied that they were aware of the circumstances of the case from the facts set forth in the memorials which were sent in by hundreds. The general tenor of the memorials of that period was that a great calamity had fallen upon the land; that the memorialists objected to what were commonly called the useless

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works, carried on under the Labour Rate Act, and that they strongly urged the Board of Works and the Government to set forward useful and reproductive works, especially arterial drainage works. The Land Improvement Act had not then commenced; but the Arterial Drainage Act was in full, though not in extensive, operation, and the pressure of this popular opinion and desire naturally fell upon arterial drainage works.

89. Is there any proof that the parties interested did memorialize the Board or the Treasury to carry those works on at a disadvantage: take, for instance, one particular case for an example, that of the Brosna drainage; does it not appear in the correspondence that that allegation is flatly denied by the committee of proprietors, and that the Board of Works have not been able to prove their case?

I do not mean that any parties memorialized the Board of Works to undertake works which the parties believed would be unremunerative; but being possessed with an opinion and a desire that productive works should be carried on, and believing that those drainage works would, on the whole, be productive, notwithstanding the disadvantages connected with the famine, they urged the Board of Works to execute them, because they thought they would be profitable, and because they knew they would be useful for giving employment to the people, and because they thought this, generally speaking, the most beneficial mode of giving relief.

90. Does not the question of profit depend entirely upon the cost?

Not entirely, because the same sum of money would produce very different results on different kinds of land, or upon the same kind of land in different situations; but it depends in a great degree upon the cost.

91. Must it not depend entirely upon the cost in relation to the land; because if you expend upon the land a larger sum than the increased productive power of the land is worth, it must be so far a loss?

If you take a given piece of land, it will depend entirely upon the sum of money laid out upon it, whether the drainage is profitable or not. If certain limits of expenditure are exceeded, even the most promising subject will become unprofitable; but, on the other hand, equal sums of money will produce very different results on different pieces of land. Some kinds of land are much more capable of improvement by a small sum than others.

92. The Board of Works appear to have paid very little deference to the opinion of the landed proprietors; were they disposed always to pay the utmost deference to the opinion of the Treasury?

As I have before mentioned, they were constituted by Parliament an independent Board; but the Treasury, acting in the execution of what it believed to be its duty, considered it necessary to bring them under its own control. It was natural that the Board of Works should be reluctant to yield to a control which had not been sanctioned by Parliament; and in the early correspondence between the Board of Works and the Treasury, it will be found that the Board of Works met us by the argument that they had been constituted by Parliament an independent Board, and that power had been given to them quite irrespectively of the Treasury; and that the Treasury were going beyond the intention of the law in bringing them under control, and requiring their accounts to be audited by the Commissioners of Audit. But although it was not in the letter of the Acts of Parliament, we considered that it was in the spirit of the proceedings of Parliament, that where large sums of public money were at stake, the financial department should look closely after the expenditure, especially with a view to their ultimate recovery.

93. You are perhaps aware that an opinion has prevailed very generally in Ireland, almost up to the present time, that the Board of Works, being a Government Board, was practically, though not legally, under the control of the Irish Government, and that that opinion gave great confidence to parties who were doubting whether they would intrust them, as regards their own properties, with the very arbitrary powers given by the Act; is there any foundation for that opinion?

None whatever; the Board of Works, since its re-constitution in 1832, has never been under the authority of the Lord Lieutenant. It has been a Treasury Board

Board entirely; but in respect to drainage it was under no authority whatever; in that capacity it was an independent Board, not under the authority either of the Lord Lieutenant or of the Treasury. It must have been notorious in Ireland that the Board of Works, so far as they were under any control, were under the control of the Treasury.

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94. It appears that there were several communications made from the Irish Government to the Board of Works, and that in the programme of the duties of the Commissioners, the Chairman of the Board of Works was to take care of the Castle communications: what does that mean?

The meaning of that is this: that when the Board of Works, in consequence of the great extension of its operations arising out of the famine, became a body of great importance in Ireland, the Lord Lieutenant found that his authority was overshadowed by the excessive overgrowth of this Board, and then the Treasury instructed the Chairman of the Board of Works to wait once in every week upon the Lord Lieutenant, and to report to him the progress of their proceedings, and to take his opinion on any matters connected with the operations of the Board of Works. This has reference not merely to drainage, but to all their other functions. But although directed to keep the Lord Lieutenant acquainted with what was in progress, and to receive any suggestions or observations which he might have to make, and perhaps to report them to the Treasury, the Board of Works was not placed under any official control of the Castle, and was not relieved from any of its responsibility to the Treasury in consequence of this arrangement.

95. As you are of opinion that the Board of Works were fully authorized in altering the works at pleasure, and carrying out new works without the consent of the proprietors, it is scarcely necessary to ask whether, with reference to the complaints that they had frequently enlarged the area of the works, you are of opinion that they were fully justified in that also?

I do not say that they were justified in every case in which they exercised those enlarged powers. What I have been contending for is that they possess those powers by law, and that it was necessary, from the nature of the case, that they should possess them. Whether they have discreetly applied those powers in every individual case will be for them to establish. I would suggest that they should themselves be examined with reference to particular cases.

96. You are aware that a great many important works are now suspended in consequence of the proprietors withholding their second assents; have you any idea of the cause why the proprietors so withhold their second assents; is it from having confidence, or not having confidence, in the Board?

I do not feel authorized to say what their motives are. I would suggest that they should be themselves asked. I may say generally that it must be owing to their entertaining doubts whether, if they did confer those powers upon the Board, the result would be profitable to them.

97. Have you reason to think that there is a single case in which the second assents have been withheld by the proprietor, in which the estimates have not been very largely exceeded in the execution of the works?

I cannot give a general opinion as to individual cases.

98. Can you call to mind any case having come before the Treasury in which the Board of Works reported that the proprietors had withheld second assents, but at the same time that the estimate for the original work, as far as the work had gone, had not been very largely exceeded?

In the Brosna case, respecting which there has been correspondence, I know that one ground alleged for withholding the second assents was that the estimates had been considerably exceeded, and that the proprietors felt that they had no security, if they gave second assents, that they would not be exceeded again.

99. In the case of the Brosna drainage, in the correspondence it appears that the original estimate was 47,329 *l.*; and then, a little further in the correspondence, this is returned as one of the works to be executed for about 2,000 *l.* under the estimate: the estimate in 1848 is 45,839 *l.* 15 *s.* 8 *d.* Then the next estimate, on 22d March 1850, is 53,593 *l.*; that is 6,000 *l.* over the original estimate. Then the next estimate (which is at page 274) is 57,066 *l.*; and then

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we come to the revised estimate, the last one, which is 76,000 *l.* Now do not you think there is enough in that case to excuse the proprietors for not being disposed to place implicit confidence in the Board of Works?

There is certainly enough in it to induce them to make very particular inquiries, and to satisfy themselves, before they give their second assents, that the work will be satisfactorily executed within an expenditure which will still leave it a profitable work. But I have no doubt that many circumstances will be alleged by the members and officers of the Board of Works in justification of this largely increased estimate. I believe this work was commenced under the Summary Proceedings; that is, that the final assent was under the Summary Proceedings.

100. Would you, under those circumstances, conceive that it is an unreasonable request on the part of the proprietors that the Board of Works should have the work inspected by some eminent engineer in order to secure them against committing themselves to an unlimited expenditure afterwards?

If the proprietors, under all the circumstances of the work, desire that they should have the additional security of the survey and report of an eminent civil engineer, and are willing to pay the expense of that survey and report, I see no objection; I think it is a very fair proposal.

101. Do you think that any man in his senses would go on, after he had found that a so much larger expenditure than he had been induced to expect had been incurred upon a work far from completion: in any private undertaking, do you consider that any sane man would go on without a very searching investigation as to the whole state of the case?

I conceive that it would be quite proper for the proprietors, under such circumstances, to call for a full investigation to satisfy themselves that their interests would be properly looked after, and that the completion of the work in the manner intended would be profitable to them, before they gave their second assents.

102. Is it from expressions of opinion which have come to your knowledge, on the part of the proprietors and other parties concerned, that you have founded your opinion, that the Board of Works do look after the interests of the proprietors?

It is from my general observation of the manner in which they have executed this trust. They may have failed in point of regularity in some things; but my belief is that they have done their best for the proprietors according to their judgment, and that the works in general have not only been well executed, but have been economically executed.

103. Is that the result of your observation?

That is the result of my general observation.

104. That they have been economically executed?

That they have been well executed, and, generally speaking, economically executed.

105. Can you name any particular instances?

I am quite aware that the original estimates have been exceeded in many instances, especially in regard to those works which were undertaken under the Summary Proceedings; but although the original estimate may have been much exceeded, still the work may have been well and economically executed, and may be a profitable work. I will take this opportunity of making a very important observation, which is, that it is by no means for the benefit of parties interested in works of any kind that the engineer should be pressed to give very safe estimates—estimates that are sure to cover the whole of the expenditure; and that he should be called to a very strict account for any excess over the estimates; for the effect of taking that course necessarily is to induce the engineer to give outside estimates; and, when he once obtains the sanction of the parties interested to a large estimate, it generally happens that the whole of the money is expended. I think it is much more for the interest of the proprietors, that the Board of Works should be left to form their estimates according to their own view; and afterwards, in case of any excess, to expend, in addition to the original estimate, such further sums as, in the progress of the works, are found to be absolutely necessary.

106. Can

106. Can you refer the Committee to any particular cases of works which you have observed to have been economically executed?

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I should say, generally, that I believe that the numerous works, the final awards of which have been already made, have been well and economically executed.

107. And that the results are profitable?

I believe so; and that, notwithstanding the present temporary depression of the profits of landed property in Ireland.

108. Have you heard any evidence to that effect from the proprietors?

My opinion is in a great measure founded upon the absence of complaints with regard to the majority of cases in which the final awards have been made. The Irish people have a strong sense of injustice, and they readily complain if they think they have ground to do so.

109. But they do not complain when there is no means of affording them redress; and you have said already, that the Treasury have no power of affording them redress?

But we have received plenty of complaints; although we have no legal power of affording redress in respect to any of the powers exercised by the Board of Works under the Drainage Acts, we have received plenty of complaints in the case of particular drainages where parties believed themselves aggrieved; and considering, also, that all classes in Ireland are very sensible to injustice, I infer, that as, in regard to the majority of the drainage works for which the final awards have been passed, we have received no complaints, therefore they have been well and economically executed.

110. You are aware that, besides the Brosna drainage, there are a variety of other cases similarly situated, in which the proprietors have refused to give second assents from want of confidence in the Board of Works; do you think that it would be right and proper that there should be an inquiry into those cases by some independent engineer; or do you think it is consistent with the duty of the Treasury to intrust that to an officer who was originally a surveyor, and has been raised to his present position without ever having established his reputation as an engineer?

I am an advocate for full and complete inquiry, not only upon that, but upon every point. The Board of Works are acting as trustees for the proprietors in the case of these drainages; they are spending the money of the proprietors; and the more the proprietors can be made acquainted with the progress of the works the better; and their confidence will be obtained in proportion.

111. Can you suggest any practical way in which an effectual inquiry could be made?

I would rather consider the suggestions made by other people; but one suggestion has been made in a recent question, that civil engineers of high reputation might be employed to investigate the circumstances of particular drainages, and to report especially as to the plan of the work. I think there is one point upon which any well-qualified independent engineer would be able to give an opinion, which is, whether the works executed or proposed are more or less than sufficient for the proper drainage of the district: then the next question would be the expense; no doubt an independent engineer might give an opinion upon that point also, but not with the same certainty, especially an English engineer: then a further question would be as to the profitableness of the work, which would include the valuation of the lands, and the probable improvement in the productiveness of the lands; that would be a question with which an English engineer would be hardly competent to deal.

112. With reference to the correspondence to which you alluded about the Brosna drainage, was not a request made to the Treasury last July, that an eminent engineer should be sent down to inspect the work, and to arbitrate between the proprietors and the Board of Works?

The correspondence has been in progress up to the present time; it has been going on in the way of replication and rejoinder between the proprietors and the Board of Works up to the present time; and the Treasury has not yet taken any action in the matter, so that the point referred to in the question is still under the consideration of the Treasury.

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113. By whom is the staff of the Board of Works appointed?

The members of the permanent establishment of the Board of Works in all the departments are originally appointed by the Treasury; but the actual fact has been this, that in order to meet the excessive pressure upon the Board of Works during the famine, a large temporary establishment was employed; and as their business was gradually brought within reasonable limits after the famine, we have insisted upon the temporary establishment being gradually reduced, retaining the most efficient persons, so that, as a matter of fact, with the exception of a small nucleus of persons composing the original establishment of the Board of Works, the persons now on the permanent establishment are composed of a selection of the most efficient persons, out of a much larger number of persons temporarily employed during the famine; and there is also a sort of rider or supplement to the permanent establishment, composed of a limited number of temporary clerks, but even they were selected out of a great many: when the persons belonging to that supplemental establishment of the Board of Works have been absorbed in the regular establishment, and new vacancies occur in the ordinary establishment, they will be filled up by the Treasury.

114. By whom were they appointed?

Under the circumstances which I have described, the great majority of the permanent persons employed under the Board of Works were originally appointed as temporary officers during the famine.

115. Who recommended them?

The Chairman of the Board of Works: all those officers who fill the appointments of temporary engineers, assistant engineers, and check clerks employed in the drainages, were appointed entirely by the Chairman of the Board of Works, on his responsibility.

116. Who fixed the salaries?

The Treasury, on the recommendation of the Chairman of the Board of Works.

117. Does your evidence apply to those who were appointed as engineers and assistant engineers in the drainage operations, as well as to those employed upon the ordinary operations of the Board of Works?

Yes. The Treasury has never interfered in the appointment of the engineers, assistant engineers, check clerks, and all the temporary persons employed upon the drainage operations, partly because the appointments were in their nature temporary, inasmuch as they ceased with the completion of the works on which these persons were employed; but mainly because they were professional appointments. We considered that the Board of Works were professional officers, intrusted with the execution of these works; and that therefore it was due to them to allow them the appointment of their own professional subordinates.

118. Did you ever feel any apprehension that the Board was proceeding too rapidly in the execution of preliminary surveys for carrying out new works?

Yes. Towards the close of the year 1847, when we found that the Board of Works had commenced preliminary proceedings in most parts of Ireland, we felt great apprehension of the consequences, and took effectual steps to guard against them, by directing an immediate and entire suspension of all preliminary proceedings; and we also adopted the other measures previously described by me.

119. Did you think that there was too much anxiety on the part of the Board to commence preliminary proceedings?

I should be sorry to anticipate the justification which they will themselves submit to the Committee. The main ground upon which they justified to the Treasury their extensive commencement of preliminary proceedings was, that they were pressed upon them by the parties interested, as an appropriate and beneficial means of giving relief in consequence of the famine, and that two Acts of Parliament had been passed expressly for the purpose of facilitating the application of the Drainage Act to various parts of Ireland.

120. Do you think there was any disposition on their part to employ too large a staff?

As regards the executive staff employed in the country on drainages, no evidence

evidence has ever come before me that would induce me to believe that it was too large. There have been at various times discussions between the Treasury and the Board of Works as to whether particular individuals on the establishment of the Board of Works at head quarters, both permanent and temporary, were required or not.

121. Did not the Treasury especially remark the fact, that the salaries of the drainage staff amounted to about 30,000 *l.* a year, and the total staff to 70,000 *l.* a year?

The Treasury was alarmed at the extent to which the Board of Works had commenced preliminary proceedings, and in consequence of that had employed officers to carry on those preliminary proceedings; and in the statement made by the Treasury, the great number and cost of the officers employed in various parts of Ireland was prominently put forward as a reason for bringing their operations within safe limits.

122. Were there any communications to the Treasury from the Irish Government upon those matters?

I do not recollect any official communication from the Irish Government calling the attention of the Treasury to an excessive number of officers employed by the Board of Works, or to an excessive amount of remuneration. Will your Lordships allow me to complete my answer to a previous question connected with this part of the subject: a question was put to me bearing upon the propriety of continuing the employment of engineers and other officers who had been originally employed for drainages which had been suspended; I wish to guard myself against being understood to give an opinion adverse to the propriety of continuing them. The Board of Works will give their own reasons; they will probably say, that there are great objections to dismissing engineers who are conversant with the drainages, and had commenced and carried them on up to a certain point, and that they hoped soon to obtain funds to complete those drainages; and they will also probably say that the establishments objected to were not employed merely for the purpose of those particular drainages which were suspended, but also for other drainages which were still in progress.

I also wish to mention, that in the course of the revision of our system of account in Ireland, it was settled some years since, that all the repayments should be brought together under the Paymaster of Civil Services; previously to that, the duty was partly under the Board of Works, and partly under the Paymaster of Civil Services; but it was considered desirable that this duty should be brought together under the Paymaster of Civil Services, and that he should be solely responsible for seeing that the advances made by the Government in Ireland under every head are duly repaid; and a Minute, dated the 16th of October 1849, will be found at page 419 of the Correspondence, directing that arrangement. The drainage repayments were included in this arrangement; and as regularly as the Board of Works make a drainage award, it is handed by them to the Paymaster of Civil Services, who proceeds to recover the instalments in accordance with the award. The proceedings which have taken place under that head will be found in the last portion of the Correspondence, entitled "Repayment of Loans;" and I may say generally, that the whole of that part of the subject is in a very satisfactory state; we have got the advances into a very good train of repayment. Considering the state of depression (though now in an improving state) of the country, and all the difficulties with which we have had to contend, the repayments are coming in very regularly.

In connexion with the application of the Drainage Act to the purpose of relief as reproductive work, I would suggest a reference to an important letter from Mr. More O'Ferrall, dated 9 November 1846, forming part of a correspondence which occurred in November and December 1846, at the time of the labour rate. In this letter Mr. More O'Ferrall, who has always taken a particular interest in this subject, and was the author of the original Act, which was a very good one, and was well arranged in its general plan and details, although it was not carried into effect, pointed out very clearly the applicability of the Drainage Act to the purposes of relief; and the Treasury, partly upon the grounds described in his letter, came to the resolution to lower the rate of interest upon the drainage loans. The whole of the loans which were made in anticipation of the Land Improvement Act for detailed or thorough drainage were

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reduced to 3½ per cent. interest, and the loans for arterial drainage were reduced from 5 per cent. to 4 per cent. This Correspondence commences with Mr. Redington's letter, dated the 11th December 1846, at page 53 of the Correspondence, and ends with my letter, dated the 15th December, at page 56.

123. With respect to the great desire which existed at that time to add to the power of employing the people by works of arterial drainage, was it not a necessary consequence that, so far as the people were so employed at that season, under the circumstances of the country at that time, the expense of the work must have been very considerably enhanced?

The necessary consequence of their being so employed at that season was, that the works would be less profitable than they would have been if they had been carried on under ordinary circumstances at a different period; less profitable than they would have been before the famine, or than they would be after the famine; but although comparatively unprofitable, it does not at all follow that they were positively so; it does not follow that they would not yield a fair rate of interest upon the expenditure.

124. Independently of other circumstances, was not an anxiety especially felt to employ the people in the winter season; whereas under ordinary circumstances, looking merely to the profitable expenditure of money upon drainage, the works would have been suspended till the summer time?

That is quite true. If the parties interested in the work had looked only to their own interest, that is to say, had taken a limited view of their interest, and had looked to their interest only as arising out of those works, they would have suspended the execution of those works till the following summer; but those parties were charged with providing relief for the destitute, starving population; and they considered that this would be a more profitable way of providing relief than under the Labour Rate Act.

The Witness is directed to withdraw.

Ordered, That this Committee be adjourned to Thursday next, One o'clock.

Die Jovis, 10° *Junii* 1852.

THE EARL OF ROSSE in the Chair.

Evidence on the Drainage of Lands (Ireland).

R. Griffith, Esq.

10th June 1852.

RICHARD GRIFFITH, Esquire, is called in; and, having been sworn, is examined as follows:

125. YOU are Chairman of the Board of Works?
I am.

126. When were you appointed Chairman?
On the 1st of April 1850.

127. Has any new arterial or river drainage work been undertaken since you were appointed Chairman?
I think not.

128. Can you state the distribution of the duties of the Board of Works?
The Chairman has been appointed to conduct all the official correspondence with the Treasury, and otherwise; and to superintend the several public departments placed under the control of the Board; in addition, I have continued to conduct the land improvement drainage works, which, as deputy chairman, I had conducted from the passing of the Act in 1847; I also, with the assistance of Mr. Radcliff, conduct the Shannon navigation works; and also the new docks at Limerick, and the harbours on the Lower Shannon.

129. Have you any communications to make to the Lord Lieutenant?
During the time that Lord Clarendon was Lord Lieutenant of Ireland, at his request the Chairman of the Board of Works waited on him every Tuesday; and I then communicated to him everything connected with the Board which had arisen during the previous week, and supplied him with several returns, particularly those connected with the works under the Land Improvement Act.

130. What are the duties of the next Commissioner?
Major Larcom, the deputy chairman, conducts the whole of the piers and harbours that are in progress, and also the whole of the public roads which have from time to time been executed, either wholly or in part, by funds supplied by Government. Mr. Radcliff, the third Commissioner, conducts the whole of the new public buildings, the conservancy of old ones, and the several navigations under the general superintendence of the Board. Mr. Mulvany, the fourth Commissioner, has the entire management of the arterial or river drainage works, which he had from their commencement; and we all act as Commissioners of Fisheries, in conjunction with the Inspecting Commissioners of Fisheries.

131. Are you aware what appointment Mr. Mulvany held before he was appointed Drainage Commissioner?
He acted as superintendent, under the Shannon Commissioners, of the upper division of the River Shannon, at a salary of 600*l.* per annum.

132. It is stated in the correspondence that he was a surveyor on the Shannon?
He had been employed as a surveyor on the Shannon previously to the commencement of the works; previously he was employed by me in the boundary

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department of the Ordnance Survey of Ireland; from thence he was, at the request of Sir John Burgoyne, transferred to the Shannon; on the commencement of the works he was intrusted with the local superintendence of the lower division of the Shannon, between Limerick and the mouth of the river, including the several harbours then in progress; subsequently he superintended the Shannon works between Limerick and Killaloe; but on the commencement of the works on the upper portion of the river, the works were divided into two districts: Mr. Henry Buck was placed as superintendent of the lower division, from Killaloe to Lough Ree, and Mr. Mulvany of the upper division, from Lough Ree to Lough Allen and Lough Key.

133. When Mr. Mulvany was first employed by the Board of Works, what was his profession?
An engineering surveyor.

134. He was employed under the Boundary Commission?
Yes, under the boundary department of the Ordnance Survey, of which I was the head.

135. Are you aware whether Mr. Mulvany, before he was appointed Drainage Commissioner, had been engaged in any large drainage works, either in England or on the Continent?
I believe not; I think the only practical acquaintance he had with drainage works on a large scale was derived during the period he was employed by the Shannon Commissioners on the River Shannon; the works on the River Shannon combined navigation and drainage on a large scale.

136. He was not engaged in any works in England that you are aware of?
I think not.

137. On the Shannon, under what engineer was he employed?
Mr. Thomas Rhodes, who was appointed by the Treasury to make a survey of the River Shannon, with a view to the improvement of the navigation and drainage of the adjoining flooded lands, was the head engineer; he laid out all the works, and subsequently continued as the executive engineer; Mr. Mulvany was employed under the Board, and subordinate to him, first in the lower, and subsequently in the upper division of the Shannon, as resident superintending engineer.

138. Then he had no experience, that you are aware of, of draining operations, except what he acquired under Mr. Rhodes?
None, except what he acquired under Mr. Rhodes, who was the conducting engineer of the Shannon works generally.

139. You have stated that he was appointed at the recommendation of Sir John Burgoyne; at the time that he was recommended by Sir John Burgoyne, are you aware whether Sir John Burgoyne contemplated that he should be appointed to superintend large or small draining operations?
When he was appointed resident engineer on the Shannon navigation, on the recommendation of Sir John Burgoyne, there were no large or small drainage operations in progress, or, as far as I know, in contemplation; it was subsequent to the approaching completion of the Shannon works in the year 1842 that the Drainage Act passed, and that Mr. Mulvany was recommended by Sir John Burgoyne to the Government to be the acting Executive Commissioner of Drainage; for at that time the drainage and the public works were two distinct departments.

140. At that time the drainage was only an experiment?
The Act of Parliament was very comprehensive; but it may have been considered in the light of an experiment, as it was the first of the kind in Great Britain.

141. At what salary was Mr. Mulvany then appointed?
At a salary of 400 *l.* a year as Drainage Commissioner, and at 200 *l.* a year as Fishery Commissioner.

142. When Sir John Burgoyne recommended Mr. Mulvany, does it not seem to be evident that his object was to obtain a person who would perform the duties

duties at a very small salary, he considering the works then likely to be undertaken but of little importance?

I cannot say exactly what view Sir John Burgoyne may have taken on the subject; but I know he thought highly of Mr. Mulvany; I have often heard him express an opinion that he was a clever man, and I do think he is a clever man.

143. In the Report of the Board of Works, and also in the Treasury Minute, respecting the appointment, there occur these words, "that he should be, if possible, a person of some engineering acquirements"?

I think Mr. Mulvany came within that description; from the practice he had on the Shannon works, he had acquired considerable experience in engineering works; for the Shannon afforded examples of almost every kind of engineering work, and some of a very difficult character.

144. Will you have the goodness to state Mr. Mulvany's duties?

He has the general superintendence of the drainage operations; and he frequently examines the districts himself; on an application on the part of the proprietors that a particular drainage work should be undertaken, being a very energetic and active man, he was in the habit of examining the district himself, taking with him the person by whom he proposed that the surveys should be made, and having determined them, on the surveys being made, and approved by the then Board (I am speaking now from information, because the period of which I am speaking was antecedent to my becoming a member of the Board of Works), and the proprietors having met and approved of proceeding with the work, careful surveys and estimates were then made; when a second meeting of the proprietors took place, at which the plans and estimates of the whole of the proposed works were laid before them; and at this meeting, or subsequently, if two-thirds of the proprietors in extent of the land to be drained gave their assent in writing, the works were commenced under the provisions of the Act, which gave the Board of Works very large powers indeed: when time permitted, Mr. Mulvany attended the meetings, and gave such explanations as were called for; such was the duty he performed, and he has continued to perform it up to the present time.

145. Does he practically exercise his powers independently, or does he exercise them under the complete check and control of the Chairman of the Board of Works?

At present the works are nominally under the control of the chairman of the Board of Works; but it must be observed that, where the works are so very extensive, and where the chairman has himself special duties to perform, of a very onerous nature, it is impossible for him to go into the detail either of the estimates or plans. But whenever anything is submitted to the chairman, or comes within his knowledge, which appears to require consideration, the matter is brought before the Board generally, when, in conjunction with Mr. Mulvany, they decide the points at issue. But those subjects for general consideration have very rarely occurred, and, consequently, considerations or investigations of the kind have not been frequently brought before the Board. My duties are various and so engrossing that, unless a subject requiring discussion is specially brought before the Board by Mr. Mulvany, or is brought under my notice by other parties, I have no means of becoming acquainted with the engineering details connected with alterations in the works in progress; but all cases of new appointments come before me, and, if approved, are referred by me to the Treasury for sanction.

146. Then the drainage department was practically under the complete superintendence of the Drainage Commissioner, with but little superintendence, if any, on the part of the chairman of the Board of Works?

It was, and is, with very little interference on my part, or on that of the Board, except in the cases just mentioned.

147. When was Mr. Harding appointed?

When I joined the Board of Works as deputy chairman, in the month of September 1846, I found Mr. Harding employed in the drainage department as a valuator; he was the chief valuator; but I think it was in 1848 that it was recommended by Mr. Mulvany to Colonel Jones, and the Board approved of the

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recommendation, that he should be made the superintendent of valuations, and assistant to the Board in making the awards, at a salary of 800 *l.* a year; and he continues to perform those duties at the present time in an efficient manner.

148. Then, was Mr. Harding appointed at the recommendation of the Commissioner of Drainage?
At the recommendation of the Commissioner of Drainage, but approved of by the chairman and the other Commissioners at the time.

149. What are his duties?
His duties are to assist the Board, in regard to the valuations connected with drainage, and the calculations of the amounts for awards, and all calculations which are not engineering calculations connected with the transactions belonging to the arterial drainage.

150. Then, the valuations before the award, and subsequently to the award, are carried out under his superintendence?
They are investigated and arranged by him, but the valuations are not made by him, though, where doubts arise, there are sometimes valuations for correction made by him in the field.

151. Are they made by people under his supervision?
Not under his supervision, but under the supervision of the Drainage Commissioner.

152. Then, practically, his duty is to assist the Drainage Commissioner in supervising those valuations?
In supervising the valuations, and in assisting in making the calculations and arrangements for the awards.

153. You have stated that one part of your duties consists in communicating occasionally with the Lord Lieutenant of Ireland; was the drainage department of the Board of Works practically in any way under the control of the Irish Government?
It was not.

154. Was it under any Government control?
It was, and is, under the control of the Treasury. The Government does not actually give control to the Treasury; but the Treasury having advanced, or agreed to advance, very large sums of money, under the authority of Parliament, to the amount of 2,000,000 *l.*, they have, during the period I have been a member of the Board, asserted a considerable authority over the arrangements, particularly over the appointment of officers. No officer above a certain rank, a very low rank, 5 *s.* a day, can be appointed without the approval of the Treasury.

155. Then the Treasury has the power of removal also, and in that way has practically a control over the Board?
It has the power of removal as well as of appointment.

156. If the Treasury gave orders, and the Board did not obey them, would not the Treasury practically have the power of enforcing their orders?
Certainly.

157. What power have the Treasury over the Board of Works?
The power of appointment or dismissal.

158. Have they any power of stopping the works?
No absolute power of the kind, but if they removed the persons who conduct the works, their immediate discontinuance must follow. The Treasury have the power of withholding their assent to the commencement of a work, but after the work is in progress, they have only the power of regulating the persons who are to carry it out.

159. How is the money provided for the execution of a work?
The money has been provided from two sources. The original framers of the Act intended that the whole of the money should be supplied from private sources, but it was soon found that the works were on such an extensive scale that the supply of money from private sources was insufficient, and the Government has made very large advances; the last agreed to by Parliament amounted to 800,000 *l.*, and the total advances, or undertakings to advance, up to

to the present time amount to 2,000,000*l.*; while the amount of money that has been advanced on debentures by private persons amounts to little more than 200,000*l.*

160. Are those debentures given by the landowners?
Not generally by the landlords; any individual can lend the money. The Board of Works issue debentures, bearing interest at 4½ or 5 per cent, as the case may be, upon the particular loan that is secured on the lands to be improved by a particular drainage.

161. Do the Board of Works receive the money from the owner of the land?
They receive the money from the lender; it may be any one. Trustees sometimes lend trust money on the security offered.

162. Then, in fact, the debenture is only a means of borrowing money on the part of the Government?
On the part of the Board of Works, on the security of the land to be improved, and not of the Government.

163. It becomes a debt from the public, does it not?
No; the money is lent on the security of the improvement of the land, which is the object of the arterial drainage. The claim for the repayment of the money overrides all previous liabilities of the land.

164. Is this the mode in which the work is carried on, that the owners make application to the Treasury for carrying a particular drainage into execution?
No.

165. Who does make the application?
The Board of Works inform the Treasury that the proprietors in a certain part of the country requiring drainage (under the first Act it was the owners of two-thirds, it is now one-half of the area of the land to be improved) have assented to the commencement of a certain drainage work, on which, if they think fit, the Treasury consent that the money agreed to be advanced may be applied to that work. I am now speaking of what took place up to the year 1848; subsequently to that period no new drainage work has been commenced.

166. Who are the proposers of the work?
The proprietors.

167. They apply to the Board of Works for assistance to undertake the drainage?
They apply to the Board of Works in the first instance to have surveys and estimates made, and then (the proprietors having given their assent to the plans and estimates) the Board of Works, if funds have been provided, commence operations.

168. Do the Board of Works, on such an application, send down surveyors to inspect the work?
They send down surveyors to make the survey.

169. If they approve of it, what is the next step?
They call a meeting of the proprietors, before whom the surveys and estimates are laid.

170. The proprietors, of course, if they agree to that estimate, become responsible for that expenditure?
The land to be improved becomes responsible for it, with collateral security.

171. Then the Board of Works apply to the Treasury for their sanction to undertaking the work?
Not for their sanction so much to the undertaking the work, but to allowing the fund placed at the disposal of the Board of Works for arterial drainage being used for that particular drainage, provided they cannot procure funds from private sources at the present time; and, indeed, since 1848 no new work can be commenced unless the whole of the funds necessary for its completion have been previously provided from private sources.

172. Will you explain whether the Board of Works have power to borrow money without any reference to the Treasury?

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They have; but, under present circumstances, the Treasury have used the power of directing the Board of Works not to borrow money bearing greater interest than 4½ per cent. without their special authority, and that they shall not commence any work from private sources unless the whole sum required for the completion of that work shall be subscribed.

173. Then the Board of Works have a power, under certain conditions, to raise any sum of money that they require?
They have.

174. You were understood to say there is no application from the Board of Works to the Treasury necessary before the work is undertaken?
It is not necessary, except where the funds are to be derived from the Treasury.

175. Then the Board of Works can borrow money under certain conditions, upon their own responsibility?
They have the power of doing so; but, under the system of the surveillance, and very proper surveillance, which the Treasury have exercised, I, as chairman, would not authorize any work being commenced without the matter having been first submitted to the Treasury for its approval.

176. Was that the practice before you were chairman of the Board of Works?
In principle it was not the practice when funds were supplied; but that very rarely happened. I believe it never happened except in one instance, which was the Burren drainage, where the funds were supplied from private sources; but where the funds were not supplied from private sources, the Board could not commence without the authority of the Treasury.

177. But there was nothing in the Act of Parliament that prevented the Board of Works from undertaking any work they saw fit, if private parties could be found to lend the money?
Nothing whatever.

178. What arrangements were made for the repayment of the interest of the money?
The Board of Works were to pay the interest out of the principal in the first instance.

179. Out of what principal?
The principal of the money lent; they have no other fund out of which to pay it. During the time the work was in progress, the interest that accrued on every 100 *l.* debenture was payable out of the money lent; there is no repayment of interest or principal by the proprietors till the works have been completed and the award made, and then the instalments payable by the proprietors are required to be paid to the Paymaster of Civil Services.

180. Till the works were completed and were productive?
Certainly.

181. When funds were subscribed sufficient to undertake a work, there was no public consent necessary for the undertaking of the work by the Board of Works?
None under the Act.

182. Will you have the goodness to state how the Board of Works are constructed?
The Board of Works are appointed by the Treasury.

183. By what Act?
Under the Act of the 1 & 2 Will. 4.

184. Had the Board of Works these extensive powers at that time?
They had no extensive powers as to drainage till the passing of the Drainage Act, in 1842.

185. Have you not stated that the only check which the Treasury or the Government have upon the expenditure of the Board of Works consisted in the appointment of the officers?
In regard to river drainage, that is the case at the present time; but under the

the Act, the Board of Works had the appointment of the district engineers, and the engineers themselves had the appointment of the assistant engineers and local superintendents; but at present the Treasury sanction must be obtained for all appointments.

186. In cases in which the Board of Works found it necessary to apply for funds to the Treasury, will you have the goodness to state how the money was issued?

It was issued by the Treasury to the Board of Works through the Loan Commissioners.

187. Upon what documents do the Treasury exercise their discretion in directing a general loan or advance to be made?

By direct application from the Board of Works, when funds are required.

188. Are any accounts tendered at the same time, or is it a simple application?

A statement is made that certain sums which were last issued have been expended, or nearly so; that the last issue, say, of 20,000 *l.* or 30,000 *l.*, as the case may be, under the head of arterial drainage, has been expended.

189. How is the money received by the Board of Works issued by them to the parties under them?

It is issued by them to the paymasters.

190. Upon what vouchers?

Upon the statements of the district engineers of the amounts that will be payable at the next monthly pay.

191. How are those andited?

They are audited by the Board of Audit at Somerset House, to whom the vouchers are all sent, together with the accounts in detail.

192. When are those vouchers sent in?

Accounts and vouchers are sent in every month.

193. Are the issues made before the vouchers are sent in?

The issues are made to the Board of Works, and by the Board of Works to the paymasters for payment; and upon the payments being made, the paymasters send up the vouchers to the accountant of the Board of Works, with the pay lists.

194. In the first instance, there is an application with respect to a certain work to provide funds; that of course cannot be accompanied with the vouchers of payment: in what mode is that first application made to the Treasury?

The first application to the Treasury is made, not for any particular work, but for a sum of money to put the Board in funds for the drainage generally.

195. Then the Board of Works, having received the money, issue it to the paymasters, and vouchers are required from the paymasters?

Certainly; and I may observe that the paymasters, according to the present arrangement, are persons connected with the Commissariat Department, who are appointed by the Treasury; the Board of Works intrust the money required for local payments to them by virtue of that appointment.

196. Is not the payment made in advance, prior to the disbursement by the hands of the paymaster?

The payments are made monthly, to the amount earned by the labourers during the month.

197. Supposing a certain sum at your disposal for arterial drainage, do not you issue money to the local paymaster in the first instance, to enable him to meet his disbursements?

Certainly; the accountant of the Board of Works makes an issue to him to meet the disbursements to be made during the month.

198. Is that upon estimate?

Upon an estimate or statement sent up by the district engineers of the monies payable for each work for the current month, at the next pay day.

199. The Board pay the money into the hands of the paymasters?

They do.

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200. Are the paymasters a body quite distinct from the Board of Works, and not under their control?
Indirectly they are under their control, because they can direct them to proceed to certain districts to make payments; but they are not appointed by the Board of Works; they are Commissariat officers, generally speaking. There are some assistants not Commissariat officers; but, generally speaking, the payments are made by Commissariat officers.

201. Do the paymasters receive the vouchers from the engineers?
No; the paymasters receive the vouchers from the persons whom they pay—from every individual. The engineers pay nothing; no money is allowed to go through their hands. The paymasters pay the money, and the overseers stand by and see the payments made to the individuals, or to the gangers or head men of those who earn the money.

202. The paymasters pay the wages of the men?
They do.

203. Do they pay them to each individual, or are there overseers who receive the money for a gang?
The whole work is let by private contract to gangs of from 10 to 12 persons; and the ganger, as he is called, who is elected by the persons who work (he being one of them), receives the money for his gang according to the measurement of the particular work that is done.

204. In the first place, how do those accounts of the gangers come under the supervision of the Board of Works?
The system is this: the work is let by contract to a gang at a certain rate per cubic yard. The overseer measures the work that is done during the month, and he calculates the amount, which he enters into a pay return, which return he hands to the paymaster, and the paymaster pays the ganger.

205. He pays the ganger of each separate gang; who signs the acknowledgment for the receipt of that money?
The ganger; and it is countersigned by the overseer who stands by.

206. Then this voucher is given to the paymaster?
The paymaster receives the voucher from the person who receives the money.

207. What does he do with the voucher?
He sends it to Dublin to the Board of Works, along with the pay list.

208. When the voucher comes into the paymaster's hands, what is done with it by the paymaster?
The accountant in Dublin, on receipt of the documents, examines them, and sees that the vouchers correspond with the payments. Having done so, he makes out his monthly account, which is transmitted to the Audit Commissioners at Somerset House, for the purpose of being audited.

209. The paymaster, then, does not make any report to the Board of Works?
The paymaster or accountant makes no report to the Board of Works, unless he finds something inaccurate in the accounts.

210. What possibility is there of the paymaster finding anything inaccurate in the accounts?
He has no means of doing so, unless there is an arithmetical inaccuracy, or unless there are changes contained in it, which are not admissible according to the regulations of the Board or the Treasury.

211. You have stated that money is issued by an estimate received from the district engineers by the paymasters; is the work done and paid for compared with the estimates by the Board of Works?
A schedule of the payments that have been made under the estimate is sent up to the Board of Works; if a balance remains in the hand of the local paymaster, he retains it till the next payment.

212. Is the quantity of work done stated in those schedules?
It is.

213. For instance, the number of cubic yards?
Certainly.

214. Is that compared by your Board with the estimate?
That is done by the arterial drainage department in the office, but not by the accountant.

215. It is done in the office of the Board of Works?
It is.

216. Is it compared with the quantity of work altogether ordered?
That is done previously; that comparison and examination is made in the district office by the engineer in charge; the engineer in charge originally makes a calculation of what number of cubic yards, whether of earth or rock, are contained in any particular excavation which is let, and it is entered on the section, and in a schedule numbered to correspond. Then there are, say, 3,000 cubic yards of earth, at 2*d.* or 3*d.* per yard, which have been excavated during the month; this quantity is entered in the schedule, and deducted from the total a mount of excavation contained on the lot; and at every payment the amount excavated during the previous month is deducted also, so that there is always a reference at every payment to the particular lot; and when the whole is done, the total amount paid should correspond with the amount of the original estimate.

217. Except when the contract is either above or below the estimate?
The work may be altered afterwards: the dimensions of a drain, after it has been planned, may be found insufficient, and it may be widened and deepened, and then a new contract is made. If there be a difference between the contract executed and paid for, and the estimate, it is laid before the district engineer, who, if it be considerable, submits the matter to the office in Dublin; but if it be of trifling extent, such reference is not deemed necessary; but the principal district engineer has no power whatever to make any alteration from the quantities or the estimate originally supplied by himself, without the permission received from the Board of Works, through the drainage office in Dublin.

218. But a debtor and creditor account with respect to the particular work must be kept in relation to the contracts that are entered into between the petty contractors and the engineer, showing the amount of the contract, and the amount of the monthly disbursements under the head of that contract, and concluding with the balance either way?
Exactly.

219. Therefore, you have before you in the records of the Board of Works, before you issue a new sum, the means of ascertaining both the quantity of work done, and the amount of the contracts made for the execution of the work?
Exactly. There is a return of the work done, and the payments made on each lot, till the whole is completed. Then it is the duty of the district engineer to tot up the whole, and for the local surveyor to do the same, and to see that the tot of the excavations, as well as to see the amount paid, corresponds with the estimate.

220. Is that done?
It is supposed to be done, and I believe it is done; that is the regulation which is very clearly laid down in the printed instructions. I have myself seen the sections frequently in the district offices, and have ascertained that the amount of work, as executed, corresponded with those sections; but of course my examinations did not extend beyond a general view.

221. If all that information were within reach of the proprietors, would that be any additional useful check?
That would depend upon circumstances; the proprietors might either have judgment with respect to such works or not; and they might interfere with the works injudiciously in consequence. I am rather of opinion that the proprietors should not investigate into details, which they might not, and probably would not understand, but they might make general inquiry for information, which would be supplied to them under any circumstances. The proprietors, who are of course interested parties, who are to pay for the work, have naturally an anxiety to know what is going on; and it is the duty of the engineer, and he is instructed, to give every information when applied for by proprietors.

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222. In many cases, have not the sums of money expended very far exceeded the original estimates?
The money expended in the works has, in many instances, very far exceeded the original estimates; but that does not affect the description I have given of the task-work system, because that arose from an alteration in the proportions of work to be executed, in most cases subsequently to the completion of the first task.

223. Is not this the way in which the estimate is exceeded, that after a certain quantity of area of drain has been done, it turns out that the drain is not sufficient for the general object of the work, and then a new contract is entered into for additional work?
A new survey and sections are made, and new contracts are entered into for the additional works; but such are carried on according to the system I have described.

224. The proprietors having originally agreed to a certain expenditure for executing a certain work, what steps are taken when the work is found insufficient?
According to the Act of Parliament, 5 & 6 Vict. c. 89 (the first Act), the Board of Works, having received the assents of the proprietors of two-thirds of the extent of land to be drained, have power to execute the works necessary to effect the object contemplated without reference to the proprietors; they have the power to alter or deviate from the plans, and, consequently, to alter the estimate; their duty is to carry out the work effectually.

225. They may increase the area of the work?
They may; they ascertain, in the first instance, the district of country which is affected by floods, and if on subsequent examination it appears that the extent has been erroneously laid down; they have power to rectify the error.

226. They can increase the area?
They can rectify it by adding the portions omitted.

227. Then, when certain proprietors have agreed to petition for the arterial drainage of a certain quantity of land, it is perfectly in the power of the Board of Works to increase the expense of that work to an indefinite extent?
The law authorizes them to do so.

228. And in point of fact, do they do so?
It is not the intention of the Board of Works to do more than is necessary to effect the object; neither, I believe, is it the intention of the executive officers of the Board, or of the Drainage Commissioner, to do anything beyond what is absolutely necessary; they have exceeded the estimates very considerably in some cases; but the high floods which have taken place since the works have been completed on the enlarged scale prove that they have in no case been extended beyond what was absolutely necessary to effect the objects contemplated; and although the object has been effected at a very considerable increase on the original estimate, it is for the advantage of all parties interested that the works should be effectually completed.

229. Have the proprietors no check whatever upon that expenditure?
Not under the law.

230. Under what Act of Parliament do you consider that this power on the part of the Board of Works, of exceeding the original plan and the original estimate of expenditure, occurs?
It is the 53d section of the 5 & 6 Vict. c. 89, of 1842; the gravamen of the clause is in the words "to alter."

231. You make contracts and carry on your works through your assistant engineers?
We do.

232. You were understood to state in a previous answer, that if there is any material change to be made in the works, arising from matters unforeseen at the time of the commencement, you require the matter to be brought before the Board of Works before your local engineer adopts the altered plan?
The local district engineer is not authorized to make any beyond trifling alterations

alterations necessary to execute the work on the scale and according to the plans originally approved by the Board; the changes that have been made were ordered by the Drainage Commissioner, frequently on the spot, or from representations made by the district engineer; but the several changes or enlargements of the original design have been made gradually as circumstances rendered them necessary; and although, on the whole, the alterations have been great, they have been so gradual that they were not considered to be material changes at the time the order was given.

233. As a matter of principle, in dealing with your subordinate officers, it is presumed that whilst you would give them a latitude of deviation within reasonable compass, you would restrain them from any large deviation or alteration without your approval?

They were not authorized to make any material alteration; but, previously to the last two years, the Drainage Commissioner acted on his own responsibility in directing such extensions in the capacity of the watercourses as experience proved to be necessary, without any direct communication with the Board, or receiving any authority from them.

234. But supposing that either the Drainage Commissioner in Dublin, or the Board of Works in its collective capacity, should give to a local engineer a power to execute such a work, subject to a deviation, how would you interpret the word "deviation" as between you and your subordinate?

We would give him no authority to make any deviation of any material kind without communication with the office in Dublin.

235. For instance, if you had given him authority to execute a drain between A. and B. in a direct line, and he chose to abandon that line altogether, and to execute a circuitous one at double the expense, and with double difficulty, should you think that officer not bound to ask your opinion before he so altered the original plan and section?

Most decidedly; under the orders of the Board he is not authorized to make any deviation beyond what is necessary to carry out the work according to the plans and sections, as originally designed or subsequently ordered.

236. Supposing you had given him a power of making a deviation, should you consider that, as between you and him, to warrant his making an alteration in the principle of the work, and a great alteration in the expense?

Certainly not.

237. Then, will you explain why you give to the word "deviation," in the section of the statute to which you have referred, a larger meaning than that which you feel it right to assign to it, as between yourself and your subordinate officer?

The subordinate officer is not responsible for anything but carrying on the work according to the plan given him; the Board of Works are responsible for the due execution of the object, not only to the proprietors, but to all the parties interested; and as such, they have deemed it to be their duty to make the work effectual, although it may require considerable deviations from the original design, which deviations are considered to be absolutely necessary for the ultimate success of the project; and it is on that principle alone that the Drainage Commissioner and the Board of Works have acted.

238. But taking the legal acceptance of the word "deviation," and the practical interpretation you would put upon it as an eminent engineer yourself, conversant with the dealings between contractors and those who direct them, should you include under the term "deviation" a substitution of a new work for the work previously sanctioned, and an augmentation, amounting to 30, 40 or 50 per cent. upon the original cost?

I should not, if it were not that one of the duties that devolve upon the Board of Works, that of making it an effectual work, renders it imperative upon them to execute the work so as to effect the object contemplated.

239. So that the construction which you put upon it proceeds not so much upon the interpretation of the word "deviation" itself, but upon the fulfilment of what you consider the object and spirit of the Act, which you think made it your duty to accomplish the object contemplated by the drainage?

That is my view of the question.

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240. Even taking that construction, do you consider that it is prudent or expedient, or even just, that such alterations, involving such results, should be made, without a communication with the landed proprietors, whose lands may be subject to an increased charge by reason of the change of plan?

As a matter of courtesy, and perhaps propriety, if I myself were the conductor of those works, I certainly should have communicated with the proprietors; at the same time inconvenience might arise from doing so. The number of proprietors in large works is considerable; in the Brusna (Ferbane) district there are 106, and in other districts they are more numerous; in such cases a general approval of an extension of the works could not be expected; and the Board of Works considered it a paramount duty to effect the object, whether the proprietors approved of it or not, considering it to be their duty to the persons who lent the money on the security of the improvements that they should be effectually executed in order to secure the repayment of the money, whether it be derived from private or public sources; but, as I have already said, I think it would have been more courteous and more prudent to have communicated with the proprietors, and doing so might have led to an amicable arrangement and understanding between the parties, under the peculiar circumstances under which each were placed. But it was not considered absolutely necessary by the river drainage department of the Board of Works that any general communication should be made to the proprietors previously to enlarging the scale of the excavations, conceiving, according to the legal construction of the Act, that it was the paramount duty of the Board of Works to effect the object, though at an increased cost.

241. Considering that the obligations of the Board of Works extend not only to the bondholders and other parties who have lent the money, but to the landowners likewise, whose property is pledged for the repayment of the amount advanced, do not you think that, in justice, some communication is necessary to the landowners who may be called upon to pay much more than they had reason to anticipate, as well as to secure the interest of the bondholders, who have, of course, a right to expect the repayment of the sums which they have advanced?

I certainly think it would have been a legitimate and prudent course to have taken, notwithstanding the difficulties and objections to be anticipated on account of the number of proprietors interested in every drainage work.

242. The opposite course which has been taken proceeds upon the construction of the word "deviation" in that statute as considered with reference to the object of the Act, which is the complete execution of the work?

Certainly, the power of alteration depends upon that word, as far as I read the Act.

243. Is not it usual, in making estimates for works of this description, always to conclude with an additional sum to meet casualties and unforeseen expenses?

It is; but in these works, it is evident that the original estimates were far too low; they were made in ignorance of the necessity of the extensive excavations which have been proved to be necessary; so that the works have very considerably exceeded the estimates. From the experience which I have had of them, and from the investigations made by my desire, independently of the Commissioner of Drainage, which have been directed to be made by the Treasury, I am of opinion that the works as executed were necessary, and that the expenditure has not been excessive.

244. Will you take a particular case which has been mentioned, and which no doubt is familiar to you, the case of the Brusna (Ferbane) drainage; it appears that the survey was completed upon the 30th April 1846; the assent to the works was received on the 4th July 1846; and the works were actually commenced on the 2d September 1846: will you state, first, how the money was procured to commence the works between July and September 1846?

From the Government, I believe.

245. Were there in that case any private debentures?

There were private debentures.

246. The amount of the original estimate was 47,329 *l.*?

It was.

247. How

247. How much of that money was called for at once from the Government?

It was not called for at once, but in proportion to the expenditure during each month. I have already explained that the Board of Works called for a gross sum for all the damages, and in proportion as the money was expended, other sums were called for, but not in any case for any specific drainage.

248. You have stated that from the moment the money was paid in, interest was paid upon that money?

Certainly, on the borrowed money; the Government required interest to be paid upon theirs also.

249. How much interest was required to be paid upon it?

Generally 5 per cent. from private individuals, and 4 per cent. from the Government.

250. You have stated that you received a gross sum from the Treasury, and that a certain portion of that was applied to this work; can you state what portion was applied to this work in the first instance?

I cannot; it was paid monthly, as the expenditure was incurred.

251. The interest was calculated from the date when the money was issued?

The interest was calculated by the Treasury from the day when the money was paid for the particular work; and by private individuals from the day when the debenture was signed.

252. The revised estimate for that work is 76,000 *l.*?

It is.

253. And the amount actually expended, 53,726 *l.*?

It is.

254. Was an annual payment made of interest on the amount of 53,627 *l.*?

There is an annual payment of interest upon that amount at the rate of 4 per cent. to the Government, and 5 per cent. to the private debenture holders.

255. Was that amount of interest, till the land became productive, calculated in the estimate?

The original estimate of 47,329 *l.*, that was supposed to cover the execution of the works, as well as the interest of the money during their progress; but in general, the estimate for interest was a low estimate; because the work has never been executed as rapidly as was originally contemplated, partly from the want of funds. At one period, immediately after the distress, the Government did not find it convenient to supply the funds; and the execution of the work was delayed in consequence, and the proportionate amount of interest increased.

256. In point of fact, in the estimate the interest of the money was calculated?

It was.

257. In the estimate for the 76,000 *l.*?

In the estimate for the 47,329 *l.*, and in the estimate for the 76,000 *l.* also.

258. The amount actually expended has been 53,726 *l.*?

It has, up to the 30th September 1851.

259. It appears that the works have been stopped for second assents?

They have.

260. How is the interest paid now upon that expenditure of 53,756 *l.*?

I believe out of the Government fund.

261. Is it paid at all?

It must be paid on the private debentures, and it is calculated on the Government advance.

262. From what fund is it paid?

It must be paid out of the Government fund; there is no other available.

263. Is there anybody that can answer that question?

Certainly; the accountant can answer it with certainty.

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264. Is there any other fund out of which it can be paid; but the principal, if it is paid at all, must it not continue to be paid out of the principal?
There is no principal fund available while the works are stopped for the second assents.

265. And there is no fund that can provide the interest?
Under the Summary Proceedings Act, the Board of Works have no authority for spending one farthing beyond the 3*l.* until the assents are given a second time.

266. Is the interest paid by the proprietors?
It is not. The proprietors cannot be required to pay interest on the principal till the award is made.

267. Then supposing an advance to have been made out of the Government funds for paying the interest, is it not clear that the repayment of that money ought not to be claimed from the proprietors, they being in the position of being protected from such repayment by the law as it stands?
That is a technical legal point upon which I will not pretend to give an opinion.

268. Supposing this work is ever executed, it having been stopped on the 30th September 1851, which is a year and a half ago, the interest for that year and a half upon 53,726*l.* would be rather a considerable sum; upon whom will that fall ultimately?
According to the award of the Board of Works, it will fall decidedly upon the proprietors; they will award the whole money that has been expended in principal and interest.

269. Therefore, the proprietors who assented, in 1846, to an expenditure of 47,329*l.* may be called upon to pay accumulated interest upon 53,726*l.* whenever this work may be executed, to whatever extent it may be?
They will.

270. Will they be called npon for compound interest upon that sum?
I should think not.

271. If this work is stopped for second assents, and you never get second assents at all, who then are to be the losers?
The Board of Works will make an award on the unfinished work.

272. Have they the power to do that?
I conceive they have.

273. Will you point out the clause which gives that power?
This is a legal point which has been very much discussed; legal opinions have been taken upon it, and it is conceived that the Board of Works have a right to exercise that power.

274. Then those proprietors who have agreed to an expenditure of 47,000*l.*, probably upon some estimate of advantage which they were to derive by so doing, will be liable to be called upon for 53,000*l.* for a work which has never produced one shilling of benefit to them, and their property is to be seized to pay the amount of the award?
Even if the work is not completed, a great amount of benefit has already been derived, and will continue to be derived, from the works; the upper portions of the river and its tributaries have been completed, and the grounds are quite dry, and in a considerable extent of the lower portions of the main or Brusna river the lands have been released from floods; and as the Board of Works will award payments only on the lands which have been improved, and in the proportion in which they are improved, if there are any parts of the lands which are not improved by the works, they will not be charged. It would be more perfect if the work were completed, but still the Board of Works, in making the award, will determine the proportion to be paid by the respective proprietors according to the benefit derived by their lands from the drainage operations.

275. What becomes of those who have derived no benefit?
They will not be charged; the charge will be upon those who have benefited.

276. So

276. So that an improvement which has been calculated upon 16,000 acres may have to be paid for by the 6,000 acres?
As an extreme case it might be so, but there is no example of the kind.

277. Does not the principle of the award involve not the partition of the whole money which has been expended as a charge upon the lands, but the imposition as a charge upon special lands of that portion of the money expended which is proportioned to the benefit which special lands receive?
It will be in proportion to the benefit which special lands receive from the works so executed.

278. Who is to pay the money that is laid out on a certain portion of the land which is found not to have been benefited by that expenditure?
The portions that have benefited.

279. Even supposing the benefit not to be in proportion to that expenditure?
The whole of the works that have been executed were undertaken for the benefit of the district; and if, owing to the want of completion, a certain portion of the lands are still liable to floods, in a degree equal to what they were liable before the works were commenced, those lands cannot justly be charged, and other lands which have been benefited by the work must pay for the whole.

280. Can any guarantee be given that the landed proprietors shall only have to pay an amount of money adequate to the improvement that they have received?
That will be a point of difficulty if such a case should arise.

281. Supposing a river 10 miles long included in one drainage district, and divided into two portions, the upper part five miles, and the lower part five miles; and supposing that of the work originally contemplated you completed only the upper portion of the river at an outlay of 20,000 *l.*, from which the lands lying along that upper portion derived considerable benefit; and supposing the other portion had not been completed, and the lands had not been benefited by a similar outlay of 20,000 *l.*; according to the answer you have given just now, it would appear that in that case the proprietors of the lands on the upper portion of the river would have to pay the whole 40,000 *l.* expended, although only 20,000 *l.* had been expended in improving their lands?
Decidedly.

282. When a work has been, like the one to which your attention has been called, suspended from want of funds, or from any other cause, for a year or a year and a half, is the payment of the engineering staff and superintendents continued during that interval of suspension, and made a charge to the work?
The staff is dismissed, except, perhaps, one person, who is required to take charge of the works, and see that no injury is sustained from casualties. The Board of Works assume a power, and a necessary power, in cases of casualties, such as dams breaking during times of flood, or from malicious injury, to repair the work so as to prevent injuries, even though it may exceed the 3 *l.*; and such expenditure is paid out of the public fund temporarily, or until the award is made.

283. But it would be a mistake to assume that where works like these have been suspended, although the labour is necessarily suspended, the expense of the superintending staff, which might have been required for the work, is continued and made a charge upon the work during such suspension?
In the case alluded to, of the Brosna drainage, Mr. Klassen has been retained at a very reduced salary, because it was conceived he would be the best judge of what was necessary to preserve the works from injury; and it is to be observed that some of the works, particularly those necessary for preserving the water-power of the mills, are of a temporary character, and liable to injury at every flood; and if the dams or the water-shoots gave, large compensation would be demanded by the millers.

284. A question has been put to you with reference to this point: supposing the improvement to the land to be only to a trifling extent, say less than the interest on the loan, what becomes of the principal? Referring to the 9 Vict.

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c. 4, s. 1, will you have the goodness to read the proviso at the end of that section?

"Provided always, that it shall be lawful for the said Commissioners, and they are hereby required, in making their final award after the execution of any of the works by the said Acts or this Act authorized, to specify and state therein, that the repayments of all sums expended in or about any such works as aforesaid shall be made either by one payment or by instalments, half-yearly or otherwise, so that in a case of one payment the amount of the same, or in the case of instalments, the amount of each instalment, with interest in either case, shall not exceed the amount of the estimated increase in the value of the land to be drained or improved, as in such award stated by the said Commissioners for the period allowed for such one payment, or for the several periods in the case of instalments allowed for the repayment of such instalments respectively." I cannot contemplate a case in which the improvement in the lands would not pay more than the interest; but where the expenditure has been unusually great, the repayment of the principal can be made gradual by increasing the number of the instalments.

285. Was not that proviso especially for the purpose of protecting reversionary interests, and would it not be very unjust if there were not that proviso in the Act?

I think the proviso was necessary, and it might have that effect; but the case stated can only be met by increasing the number of instalments; but I would observe that the clause which I read before, in the original Act of the 5 & 6 Vict. c. 89, gives a dominant power to the debenture holders over the land, in preference to all reversionary interests; and under that clause it is generally held that they have the power of selling the lands.

286. But the other is a subsequent Act?

It is a subsequent Act, but the power of the first Act is given equally in the 9 Vict. c. 4; these, however, are technical points of law which I have not been in the habit of considering.

287. It appears from the correspondence, that one of the causes often assigned for the works exceeding the estimates is the difficulty of borrowing; how do you account for that; have you ever heard whether capitalists are unwilling to lend upon this security?

The money was required at a period when the country was in a very distressed state, in the year 1847; it could not then be procured. I think it was not from any doubt, as far as I have ever understood, of the security, but that the money really could not be procured at the time, and the Government in consequence stepped in and supplied the deficiency.

288. Do you belong to the Statistical Society in Dublin?

I am not a member of it.

289. But are you aware that, from inquiries by that Society, it has been shown that, taking merely one species of property, there is an amount of 35,000,000 *l.* belonging to people residing in Ireland, invested in the funds here, who draw their interest over?

I am aware of that statement.

290. Does it not appear to you rather strange that the Board of Works, if the security is unquestionable, should have found any difficulty in getting any sum of money that they pleased at 5 per cent. interest?

There are a great number of persons who have doubts of everything, who in this country, as well as in Ireland, keep their money in the funds, though they could get higher rates of interest on very good security in other quarters. Landed proprietors in Ireland cannot obtain money by mortgaging their estates; and many individuals in Ireland or in England cannot discriminate between money lent on mortgage from that lent on debentures for the execution of drainage works, the land, in either case, being the security; but those who did lend money on drainage debentures considered it very good security, and trust-money to a considerable amount has been lent to the Board of Works on drainage debentures.

291. Supposing

291. Supposing the Board of Works to undertake works that would not pay to carry out good works in a reckless way, do you think that would place the principal in jeopardy under that section?

As I read the section of the Act, I conceive that the Board have a paramount power to execute the works, supposing they execute them properly and moderately. They possess the extraordinary power of carrying out works without the consent of the proprietors, though the expenditure may be considerably in excess of the estimate.

292. Supposing the public heard that the Board of Works were carrying on works recklessly; and supposing that, looking to that section of the 9th of Victoria, they were satisfied that, as debenture holders, they should have no funds to be paid out of but what arose out of the benefit derived to the land by the expenditure; do you think that would be a reasonable ground for them being slow in lending?

Certainly, if they had any idea of that kind; but it is not generally supposed that the Board of Works do expend money lavishly, or that they would expend it injudiciously; they have no object in doing so; the public have confidence that the works will repay, or they would not have been undertaken. But it is to be remembered that the country has suffered a very serious calamity since the works were commenced, since the original estimates were made, and since the original valuations were made. The value of land has fallen very considerably; and the return made by these works, as originally contemplated, would not now be profitable to the same extent as they would have been at the period when the estimates and valuations were made, and the works commenced.

293. Have not the same circumstances to which you have alluded, as diminishing the value of the land which is pledged as a security, also served to augment the cost of such works as were carried on during the period of famine and suffering in Ireland?

To a certain degree they have had that effect, because many persons were employed who, though not actually paupers from a deficiency of food, were comparatively weak and less able to work than usual; and hence, though pauper labour was not employed, still the amount of labour performed was deficient, and, besides in order to give employment during the winter, labourers were set to work at inconvenient times, and in injudicious places, near the sources of the rivers.

294. And also upon an inadequate estimate, and upon an imperfect system?

Upon an inadequate estimate and an imperfect system. The works undertaken under the Summary Proceedings Act were all confessedly inadequate. Sufficient time had not been allowed to make careful surveys, and, in consequence, the estimates were not sufficient to complete the works.

295. Were they not restricted to a certain sum per acre?

They were, to the expenditure, 3 *l.* an acre in the first instance.

296. Did they exceed 3 *l.* an acre?

They did not; whenever the expenditure approached nearly 3 *l.* an acre, the works were stopped, and that is the cause of the discontinuance of the works on the Brusna (Ferbane) at the present time; and ten other important drainage works are discontinued under similar circumstances.

297. Are you aware whether large capitalists ever have been deterred from lending money by looking at this section, and considering that the security was good for nothing?

I never heard the subject discussed.

298. Are you aware that private individuals have borrowed upon their own security (the capitalists being unwilling to trust the Board of Works) to lend to the Board of Works?

I believe there were instances of persons giving their own security on borrowing money for drainage works: but I cannot answer for the other portion of the question.

299. If a capitalist were willing to lend to a private individual upon his own personal security, and were unwilling to lend to the Board of Works upon the

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security which the Board would have to offer, is not the inference plain that he had some doubt about the security which the Board of Works offered?

The individuals alluded to were Englishmen; they were acquainted with the person who borrowed the money on his own security, but were not acquainted with the nature of the security offered by the Board of Works.

300. The expense per acre is limited to 3*l.*?

It is, in the first instance.

301. In this case of Brusna (Ferbane), the sum expended is 53,726*l.*; the number of acres being 16,860; the amount, at 3*l.* per acre, would be limited to 50,580*l.*; will you then explain how the balance between 50,580*l.* and 53,726*l.* is to be discharged?

I think the case being so, the Board of Works appear to have exceeded their powers as far as the difference goes; but I suppose the interest which accrued subsequent to the discontinuance made up the difference.

302. What is to become of the 3,100*l.*, the difference between the two sums?

If your Lordships would defer that question until you have Mr. Mulvany, who is the organ of the Board of Works in that respect, he will be able to answer all these questions in detail; but I think the accruing interest has been the cause of the excess.

303. In any instance in which such a thing took place, what would the Board of Works do?

The case being as stated, I think the Board of Works have exceeded their powers, and they are responsible, unless the difference is caused by the accruing interest.

304. In this account it appears that the revised estimate for the Brusna (Ferbane) drainage is 76,000*l.*, the acreage being 16,860; that, of course, is very far beyond 3*l.* an acre?

It would come to 4*l.* 10*s.* 2*d.* per acre, I think.

305. Has it been the habit of the Board of Works to receive estimates for a larger sum per acre for drainage than is allowed by the statute?—The statute only prevented the Board of Works from expending, under the Summary Proceedings Act, more than 3*l.* per acre, until they had received the assents of the proprietors over again to enable them to continue their expenditure; on getting those assents, the Board of Works have then the power of completing the works at an increased expenditure.

306. On obtaining second assents, they can go to any extent approved of by the proprietors?

They can go to any extent approved of by the Board of Works.

307. And by the proprietors?

In the first instance, the proprietors approve of the estimate contained in the supplemental report.

308. You stated that now one-half of the proprietors can bind the remainder?

Under the present Act they can; under the original Act two-thirds were required.

309. Is that one-half in number, or in value, or in extent of land?

In extent of land, without reference to the value.

310. Is the law, as it exists at present, that one-half of the proprietors can bind the remainder to an expenditure to any extent, even though the others wholly dissent to the original charge upon the property?

The proprietors of one-half of the land to be improved have power to control the other half, and to agree to any expenditure that they approve of, which is laid before them by the Board of Works; in the case of the Brusna (Ferbane), the supplemental or revised estimate amounts to 76,000*l.*

311. You are waiting for second assents, and the second assents of one-half of the proprietors would be able to bind the remainder to that expenditure, whatever might be its amount?

They would.

312. You

312. You say that the one-half required is one-half in extent of land; do you perceive any inconvenience resulting from that provision of the law?
It may be considered to be an unjust power; because 100 acres of bog or of boggy land may not be equal to 10 acres of good land; still the 100 acres of boggy land weighs as much in the scale as 100 acres of good land.

313. Therefore, the burden of the repayment might bear a totally different ratio to the scale by which the assents were originally decided?
It might.

314. Do not you think that inconvenient?
It is the law.

315. Looking at it, with reference to what the law ought to be in future, do you think that is the principle on which the law ought to be framed?
My opinion is, that the assents required ought to be in proportion both to the extent and value of the land previous to the commencement of the works.

316. Would it be possible to carry on any system of drainage whatever unless the principle were laid down, that the majority taken in some relation, either to numbers, or extent, or value of property, should have the power of binding the minority?
I think the actual proportionate value, as well as the extent, ought to be taken into consideration.

317. But under any circumstances, if the unanimous assent of the parties were required, would it be possible to expect that that could be gained?
Such could not be expected.

318. If the unamimous assent were required, from your knowledge of Ireland, have you any doubt there would be many instances in which parties who were interested in a small degree would stand out for pecuniary terms, in order to give their assent?
I am quite certain they would; and I am certain that if there were ten proprietors, nine might agree, but the tenth would object.

319. Unless for a consideration?
Perhaps so.

320. It appears that the present estimate of this Brusna (Ferbane) work is 76,000*l.*?
It is.

321. It appears by the printed correspondence, that the proprietors are very much afraid that if they gave their assents, a very much larger sum would be required than 76,000*l.*?
I am aware that that is their opinion.

322. That 76,000*l.* is in round numbers; not like the other estimates, which were for precise sums?
Certainly; but I believe that the 76,000*l.* is the exact amount, deducting the shillings and pence.

323. The original estimate was 47,329*l.* 11*s.* 8*d.*?
It was.

324. The survey was commenced in July 1844?
It was.

325. And it was completed in the summer of 1845?
It was.

326. And the work was commenced in the autumn of 1846?
It was.

327. So that the Board had more than a year to consider the plans after the completion of the survey?
They had; but they were anxiously engaged in the preparation of preliminary estimates for other extensive works during that time.

328. In this book of correspondence you observe that this is among the works which were to be completed under the estimate, namely, for 45,839*l.* 15*s.* 8*d.*;

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that was in May 1848, after the works had proceeded two years. It appears next, in the correspondence in May 1849, at page 201, as being a work for which there is a competent estimate. Next, it is returned as being a work which is to exceed the estimate; it is then to cost 53,593*l.*; that is on the 22d March 1850. It next appears to exceed the estimate still more, the revised estimate being 57,066*l.*, and the present estimate is 76,000*l.*; so that, comparing that with the Parliamentary Return of the 20th April 1849, it appears that since that time about 35,000*l.* has been expended, and the work appears to be only 5,000*l.* nearer completion than it was then?

The facts, as mentioned, correspond with the Returns made to Parliament.

329. Do you think it at all unreasonable that the proprietors are assured that it will cost a great deal more than 76,000*l.* after what they have seen already?

I do not think it either unreasonable or extraordinary; at the same time the work is now so nearly completed, and the scale of the work has been found so perfectly to effect the object proposed, that it is not at all probable any increase on the scale of operations will be undertaken; and under these circumstances, as the engineer certainly ought to be able to make a very perfect estimate in the present forward state of the operations, I should hope, if the work does proceed, the estimate will not much exceed the revised estimate; but the works are injured in the meantime, owing to the delay, and there is an accumulation of interest on the expenditure already incurred.

330. You say the works are nearly completed; but according to the last estimate, is not about 24,000 *l.* more required?

£.24,000 out of £.76,000 in proportion to the works actually executed is small. The cost per cubic yard is perfectly ascertained; the number of cubic yards to be executed is perfectly well known. The only casualty that may create a difficulty is with respect to waterworks connected with mill-dams and weirs; it is difficult to estimate sufficiently for the foundation of such works.

331. It happens that the petitioners have memorialized the Treasury, and applied that the work should be inspected by an engineer of eminence; do you think after what they have seen, that is an unreasonable request?

I do not think it is.

332. The Board states, that this excess has originated in the first instance from a complete change in the original proposed measure, substituting for a great portion of the length of the district a new river-course, instead of following the old one as formerly intended; was that change necessary?

The section appended to the report shows, that it is a great deal cheaper to make a new river-course, than to attempt to increase materially an old tortuous one. As a matter of economy, I think the alteration has been judicious; besides, tortuous river-courses are always liable to injury during floods, and every bend causes a deposit of silt.

333. Was this change made after consulting the proprietors, or before?

The change must have been made before consulting the proprietors. As a body, the proprietors were not consulted till the lodgment of the supplementary estimate.

334. Were any of the proprietors consulted at all before the Board undertook to make such a complete change in the character and scale of the works?

I am not aware of their having been consulted; but the changes were for the most part gradual.

335. Do you think that the Board of Works acted fairly and justly, to say nothing of legally, in making a complete change in the character and scale of the works without consulting the proprietors?

I have already said that the Board of Works in such cases, acting judicially, consider themselves responsible to the persons who have advanced the money that the works should be effective, and that nothing less than the plans which they have determined on would effect the object proposed; under such circumstances, acting in the legal view, they execute the works, or commence the execution of works, when they deem such to be necessary; but I do not mean to say that it would not have been desirable and courteous to have communicated with the proprietors before any important extension of the plan of operations was commenced.

336. It appeared from the correspondence that the proprietors and the Board were completely at issue as to the necessity of that enlargement of the works. If the proprietors held to the opinion that the original plan was quite sufficient, and that by the original plan they would obtain all that they desired, which was to convert the lands into good pasture, do you think that the Board of Works had a right to double the cost for the purpose of converting the land into arable, which was less valuable in the district than pasture land?

As to the right, that depends entirely upon a question of law. As to the prudence, I think it might have been desirable to communicate with the proprietors, and, as I have said before, had I been the executive, I should have thought it my duty to have communicated with the proprietors.

337. Have you not in your own executive capacity, in your own practice, found that the frankest communications of all kinds to the proprietors have frequently had the effect of removing objections which were discovered to be unfounded, and also of accounting for matters as to which, although the complaint might not be entirely unfounded, yet the adverse feelings were very much mitigated by such a communication?

I have never found it otherwise. I have had much communication with Irish gentlemen, and I think the only method of dealing with them is to state honestly and frankly all the circumstances of every case where a difference of opinion has arisen.

338. Looking through the whole of the cases of works, it appears that in one case the Board of Works did call the proprietors together and consult them; that is the case of the Borrisokane district; and as the report puts that fact prominently forward in that case, the inference seems to be that the Board did not consult them in any other case; was that the fact?

I believe there has been much personal communication between the Drainage Commissioner and individuals connected with different drainage works, and latterly with myself; but the subject has rarely been brought officially before the Board.

339. Looking at the report, it appears evident that the Board were aware that if they consulted the proprietors in the Borrisokane case, the proprietors would assent, but that if they had consulted them in any other case, the proprietors would not assent; is not that the case?

I cannot give an opinion as to what the views of the Board were upon the subject; I have already observed how I myself would have acted under the circumstances.

340. From the whole tenor of the reports, it appears that the proprietors were anxious to have the works carried on upon a small scale, with the view of converting the low lands into pasture; whereas the Board appears to have wished to convert everything into arable land, and in many cases to prepare the way for deep drainage in contra-distinction to shallow drainage; do not you think that from that state of things the Board may easily have inferred that the proprietors would not have assented, if the Board had told them that they were going to carry out the works in a different way, and upon a different scale from what they wished?

I do not wish to give an opinion as to the motives which might have induced the Drainage Commissioner or the Board to act under those circumstances. I believe that they honestly wished to carry out the works to what they conceived to be the proper extent; and that they conceived that the proprietors, who might have opposed their plans, were not as good judges as they were.

341. Would you have thought it right to act so yourself?

I have already said that, under the circumstances, I believe I should have acted otherwise.

342. Was it likely that the interests involved in the works would have been better taken care of in the keeping of the Board, who had no direct interest than in the keeping of the proprietors, who had a strong and direct interest?

As I have mentioned in all these cases, the Board acted upon their own judgment, and believed they were acting judiciously for all the parties interested; they may have acted erroneously, but they acted conscientiously.

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343. If it is said that (though it cannot be proved) there was to a certain extent the motive that, by carrying on these works on an enormous scale, they would have a much larger staff, much more patronage, and the works would be of much longer duration, was there not some apparent foundation for such a supposition ; do you not think that people would naturally be disposed to put a wrong construction upon the motive which the Board of Works might assign as their motive for extending the works in the way that they did?

They might assign it; but I do not think it would be well founded.

344. Do not you think it possible that the persons intrusted with the works might, from over zeal and anxiety to carry on works in which they had got to take great interest, have been misled by that to going far beyond what the true interest of the proprietors justified?

The persons on the spot, the local engineers, were not the persons who determined on, or even suggested, the alterations in the works; or if they had suggested them, they were not the persons who determined on them; it was found in February last year that the discharge of water was nearly double what was originally calculated in the Brusna (Ferbane) district; and that the works upon the enlarged scale were barely sufficient to hold the water; therefore the works have not been extended beyond what was necessary to effect the object originally contemplated, namely, to free the adjoining lands from flood. The proprietors might have said, " We prefer being occasionally flooded to an increase of the expense, and we think it better for us and for our properties, and for the persons who have liabilities on those lands, that we should diminish the expense rather than make the works more perfect:" the consideration of such views would be a question of prudence which does not appear to have been taken into consideration, the determination being to effect the object originally proposed.

345. Were not the original works carried out upon that principle; take, for instance, the Blackwater?

They were; but the Blackwater has a small catchment basin, and the capacity of the works, as originally designed for the discharge of the water, was found nearly sufficient for the purpose.

346. You are aware that when a drainage work is carried on under a private Act, the interests of the mortgagees are secured under the Bill?

I believe such is usually the case.

347. Then, reasoning from analogy, is it not much more likely that they would be secure if they had the private interests of the proprietors to fall back upon, rather than the confidence which they might place in the Board of Works?

It might be so; but we must bear in mind that the system of arterial drainage in operation is on an enormous scale, perhaps greater than it was prudent to undertake at one time; but such being the case, it was necessary to make arbitrary rules and regulations in carrying out the works, on which private parties would not think of acting in their own capacity, and the Commissioners were bound to look to the safety of the holders of debentures.

348. You stated that the money was partly raised by debentures, and partly borrowed from the Treasury, and that you received the money from the Treasury in a gross sum for all the drainages; how were the proportions of the respective works ascertained for the repayment of interest to the Treasury?

According to the expenditure. If, for example, 5,000 *l.* was expended in a month upon the Brusna (Ferbane) drainage, it was charged to that drainage.

349. Recurring to the question of the necessity of consulting the proprietors before a complete change was made in the work, has not the Legislature laid down the principle that the proprietors were the proper tribunal to appeal to when any pecuniary change took place; because it enacts that when the expenditure amounts to 3 *l.* an acre, the proprietors must be appealed to?

It was not contemplated originally that that Act should contain the 3 *l.* an acre clause, as far as I understand. It was proposed by the Drainage Commissioner himself that a check should be put on the expenditure, on the ground that works would be commenced without sufficient care being taken either in the preparation of the plans or of the estimates, the whole being done in a hurried manner to meet the particular wants of the country; and that it was better to

make

make new plans and specifications, and new estimates for the works antecedently to the time when the 3*l.* an acre was expended; it was a check proposed by the Drainage Commissioner of the Board of Works, not by the Legislature or by the proprietors.

350. Were not the Legislature, in intrusting the proprietors with the power of stopping the works after an expenditure of 3*l.* an acre, intrusting them with a much larger power, and one much more dangerous to the mortgagees, for instance (if there was any danger in intrusting them with such a power), than would have been the case if the Legislature had intrusted the proprietors with the power of obliging the Board of Works to confine themselves to their original plans and specifications?

Certainly; that was an anomaly compared with the original Act, by which the Board of Works had more extensive powers on the assents being given.

351. Can there be any doubt that the Legislature, if they had foreseen that the Board of Works would have made a complete change in the plan, character, and scale of the works, without the consent of the proprietors, would have made effectual provision to prevent that from occurring?

I think it is possible that restrictions might have been introduced.

352. Do you not think it probable that they would have done so, looking to the analogy of the restrictions as to the expenditure, exceeding 3*l.* an acre?

That restriction, as I have already mentioned, was proposed by a member of the Board of Works with a different object.

353. Did not the first works proceed very cautiously?

They were on a comparatively small scale; there was no very extensive work began previous to the passing of the Summary Proceedings Act, 9 Vict. c. 4.

354. The Board, in their second Report, laid down the principles upon which the works were to be carried out, the principles upon which the estimates were to be made, and the principles upon which the valuations were to be made?

They did.

355. Will you have the goodness to read the provisions in the second Report of the Commissioners in 1844?

"With respect to estimates, our instructions to the engineers are to include every item of expenditure likely to arise, and to take especial care that the amount shall be sufficient to complete the works in the plainest, but at the same time most substantial manner, for which they are held responsible; and before we finally sanction any undertaking, we adopt every reasonable precaution to assure ourselves that the works may be executed within the estimates."

356. Now, will you have the goodness to read the provisions respecting the valuations in the next page?

"In estimating that increase in the value of lands which may be expected to result from the execution of the works proposed, we take only the difference between the fair letting value, when so improved, and their present actual value as the basis of our calculation, and from this datum we calculate the return upon the expenditure; this increase is directed to be calculated upon the most moderate and reasonable grounds, so that no exaggerated amount of benefit should seem to be assumed; and in the cases already submitted to the test of public opinion, we have scarcely had any objection raised to this item in the valuations, though it is that which fixes the estimated relative amount of future liability, and, therefore, is the most likely to give rise to complaint, if any grounds for it existed."

357, That report, of course, was before the proprietors in each case in assenting to the works?

It was; in the instructions to the different engineers, which I hold in my hand, those words are introduced.

358. Do you think that the Board, in their subsequent operations down to the present time, have acted upon the principles set forth in that report?

I think the Board intended to act in every case according to those principles; but, owing to the change of circumstances, and the number of casualties to which works connected with river drainage operations are liable, and the increased

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amount of excavation which has been found to be necessary to discharge the flood waters, they were forced gradually—not all at once, but gradually—to increase the scale of the works, and, I think, the whole of the increased estimates have arisen from that circumstance.

359. But in no case, except in the Borrisokane case, having altered your views and plans, did you conceive it necessary to consult the proprietors?

I am not aware of the proprietors, as a body, having been consulted in any other case, but I may be mistaken.

360. You are aware that great complaints have been made that the accounts have been withheld, and that parties have stated that, even supposing everything to be perfectly right, if they had had access to the accounts at the time the works were going on, the Board could not have made those changes in the plans and character of the works without their knowing it, and without its being in their power to remonstrate against it?

The Act provides that the accounts shall be open for public inspection, for the inspection of the proprietor of every property; and the accounts are open to public inspection if the proprietors choose to come to see them. But the whole of the accounts are not kept in the district offices, because there are several items of expenditure, particularly interest, which are only known to persons in Dublin; and the Dublin office is the best place for the accounts to be seen, and they have been seen by the different proprietors connected with the different drainages.

361. But setting aside the annual interest, and all such matters which do not so much concern the proprietors, if the accounts were in the drainage offices, as the proprietors have expressed their wish that they should be, would they not have an opportunity of referring to the accounts of the expenditure as the works went on, and as different portions of the works were executed, and would not that enable them to check fraud, if fraud was practised?

The accounts of the expenditure in the districts are at all times in the office of the district engineer in the country—that I am certain of, from the reports of the officer who was lent to my predecessor, Colonel Jones, from the Treasury, to assist in making the investigations connected with drainage works, and he has had access to those accounts on every visit made by him to every work.

362. But you are aware that in the case of the Brusna (Ferbane) drainage, that is one of the specific complaints made?

It was proposed that the accounts should be shown in Dublin, where they are more perfect, and they are made out in such a form that any one can understand them; whereas the accounts in the country are arranged in such a manner that it requires a person who understands engineering works to understand them perfectly; therefore Dublin was the place at which the accounts could be best seen and understood.

363. But if a proprietor wished to look at the accounts in Dublin, they must give three days' notice, and then, unless they had an opportunity of looking at the works as they proceeded, would they get any useful information?

If he looked at the accounts at the district offices, and works were in operation at 10 or 12 or 15 miles distance, the difficulty of comparison would be the same.

364. The law has provided that the accounts shall be lodged with the clerk of the peace in each county; does it not appear that that has not been complied with?

It was conceived, I think, that the Treasury arrangement for the publication of the accounts in the Parliamentary returns every year rendered that unnecessary; but it was only an abstract that was to be lodged; and, besides, it was not originally intended that the drainage accounts were to be audited in London.

365. Will you have the goodness to read the section of the Act respecting the accounts which is in the 5 & 6 Vict. c. 89, s. 105?

"And be it enacted, that once at least in every year the said Commissioners shall prepare a true and just account or statement of all sums of money by them received and expended in the execution of any works for the drainage or improvement of any such land or river as aforesaid; and such account or statement, when so made, together with the vouchers relating thereto, shall be preserved

served by the said Commissioners at their office in Dublin, and a copy of such account, signed by said Commissioners, shall be deposited with the clerk of the peace of every county in which any part of such district shall be situate, and the same respectively shall be open to public inspection at all reasonable times in payment of a fee of sixpence; and any person interested in such works shall be at liberty to take copies thereof or extracts therefrom at all reasonable times; and the said Commissioners and clerk of the peace shall furnish copies of or extracts from any such account or statements to any person requiring same, upon payment of the costs for making such copies or extracts."

366. You observe that the account there required was to be an account prepared which would tally with the vouchers; and it is presumed, therefore, that the Act means a minute account, which would enable the proprietors to check the expenditure?

It could not be a copy of the account in full detail, as that would include a copy of all the pay lists. The account that is sent up to London is, I believe, a general statement, accompanied by all the pay lists and the vouchers.

367. Supposing the object of the account to be the reasonable one of communicating to the proprietors a knowledge of the progress of the expenditure, do you not think that a progress report made upon a simpler principle, stating the amount expended to a given date, and stating the amount expended since the last report, and giving a general view of the nature of that expenditure, would be a more intelligible, and, therefore, a more useful check than a detailed report going into the question of pay lists?

I think it would; but it was conceived, I suppose, by the Drainage Department of the Board of Works, that the publication of their annual report, which gave an annual account of the expenditure on each drainage work, together with the works executed, would meet the object; no doubt it may be observed that the Parliamentary papers are not much distributed; and for the first time permission has been obtained this year for the publication of the Board of Works' Report in octavo, at a cheap rate, for the purpose of distribution.

368. Independently of that account of each particular work, which is included in the whole of the works carried on under your superintendence, do you think that progress reports might from time to time be periodically made that would let the proprietors know in general terms the amount expended, and what was going on?

I think it would be a very useful and gratifying arrangement; but the law did not contemplate it, and, therefore, the Board of Works have not published the information locally.

369. But the law is imperative as to the accounts being deposited with the clerk of the peace; how did the Board of Works get over that?

The only statement I have heard in explanation of the grounds on which it was not thought necessary was for the publication of the accounts in the Parliamentary Reports.

370. Have you ever considered how a court of law would deal with that case?

I cannot say that I have.

371. One of the reasons assigned for the excess over the estimate in this correspondence, and also in the different reports, is, that the works were carried on as relief works. and carried on, therefore, at a greater cost?

That circumstance has been put forward as one of the causes of excess.

372. Of course it was very desirable that the drainage works should be carried on as relief works, provided there was no sacrifice of private interests; but ought not that to have been taken care of?

The river drainage works were carried on as relief works chiefly on the application of the proprietors themselves. The passing of the Summary Proceedings Drainage Act was in consequence of applications by the proprietors and deputations for reproductive works, and the river drainage operations were considered to be available for that purpose; and those deputations even went so far as to petition that the directions of the Board of Works should be made paramount, and that they should not require the consent of the proprietors to commence the works; but the Board of Works themselves objected to such power

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being forced upon them; it was on that account that the drainage works were made available for relieving distress; and though they were not executed by pauper labour, still, from the state of the country at the time, the works were carried on under unfavourable circumstances, and there can be no doubt the expense was increased.

373. Although the state of the country might render it highly desirable that drainage works should be carried on as relief works, ought it not to have been with the consent of the parties who were to pay for them?

I believe it was done in a great degree upon the application of the parties who were to pay; and I know that there were a great number of applications to the Board of Works.

374. But supposing there were cases where it was not with the consent of the parties who were to pay, would not that alter the case?

Under the general policy of the Act, many who object are obliged to pay for works that they object to, because the majority have given their assent to the works.

375. But supposing the proprietors assented to a work upon the ground set before them, that the work was to be for their benefit, do you think that the Board of Works were justified in carrying on works at a great loss as relief works without first asking their permission?

In all cases of summary proceedings works, they were commenced on the application of the proprietors of the district, therefore we must suppose those persons wished to relieve the peasantry of the country by giving them employment. The whole object of the Summary Proceedings Act, as the preamble shows, was that of giving employment to the distressed peasantry consequent on the failure of the potato crop.

376. Practically speaking, at that time was it not the fact that the Board of Works were frequently stimulated and required by the Treasury to undertake those works which have been so asked for by the proprietors at a period when employment was greatly deficient?

They were stimulated by the proprietors, and the works were authorized by the Treasury; I do not know that they were stimulated by the Treasury, but the Treasury supplied the funds for them.

377. Was not the result of those circumstances the necessity at times of commencing the works in the wrong place?

It was; they were frequently, during the winter of 1846–7, commenced near the source instead of the lower portion or point of discharge of the water into the ultimate reservoir.

378. Where those circumstances have arisen, and where the works are still incomplete, has not the result been the bringing down upon the lower lands a considerable quantity of water, without providing adequate means for its discharge?

Such a circumstance did arise about three years ago, but such inconvenience and injury has since been either altogether removed, or is at present in progress of being removed.

379. But where those circumstances have occurred at a former period which at the present time have not yet been removed, is there not serious practical damage done to the lower lands which are liable to such increased flooding?

Certainly, where such inconveniences still exist.

380. Recurring again to the Brusna (Ferbane) case, respecting which the correspondence is before the Committee, it was alleged by the Board as one of the causes of the excess that the work was carried out to some extent as a relief work. The proprietors answer that "certain portions of the works could be executed as well in the winter as in the summer. We have made inquiries, and have been unable to ascertain that any proprietors pressed them (that is, the Board) to carry on the drainage works at an unseasonable time, or pressed them at all." That, of course, is a distinct challenge to the Board of Works to produce evidence upon that subject?

I am not able to speak precisely as to the period in question; I was so busily engaged in another department of the Board of Works in carrying on the relief through

through road works that I cannot recollect, if I ever knew, what took place at the time; but the Drainage Commissioner himself will be able to answer that question.

381. Practically, are there many large works stopped in consequence of the proprietors not assenting?
There are eleven at present, I believe.

382. That, of course, is attended with serious loss?
Certainly it is.

383. Do you think that it would be advisable, with the view of giving confidence to the proprietors, and inducing them to give second assents, to have the works examined by an engineer of first-rate ability, in whom every body would confide?
It might have that effect; but unless that engineer was to carry out the works, it would amount simply to the opinion that he might consider himself enabled to give as to the probable sum that would be required to complete the works, as well as giving his opinion as to the manner in which the works have heretofore been executed, and as to whether they have been executed at a moderate cost.

384. Supposing the engineer gave it as his opinion that the plan upon which it was proposed to finish the works was as good as he could recommend, do you think that would have the effect of giving confidence to the proprietors in some degree?
I think it might, to a certain extent.

385. On the other hand, if he were to recommend a very considerable change, by adopting a smaller class of works for a larger, and the Board were to act upon his recommendation, do you think that that would give confidence to the proprietors?
I think it would do so, but I do not anticipate the latter case, because the floods show that the works as they have been executed are necessary.

386. Would not the proprietors desire, in many cases, to have an engineer, as it were, to arbitrate; because they differ totally from the Board of Works as to the necessity of the scale upon which they propose to finish the works?
That is a question which might have arisen three years ago, but at present it cannot be entertained; as the greater portion of the works have already been completed upon the large scale, it is necessary to continue them upon the same scale. Portions only of the works have been left unfinished: the great mass is finished both above and below the unfinished parts. It is usually in the vicinities of the Falls, where there are mills and other important impediments, that the works have been left unfinished; and it would be very undesirable to complete a portion in the middle on a smaller scale than those both above and below.

387. Would not that be a point for the consideration of the engineer, and one upon which, if he was a man of eminence, his opinion would have weight with the proprietors?
Certainly.

388. Then, practically, do you see any objection to having those works examined by an eminent engineer?
I do not see any objection; on the contrary, I think the Board of Works would desire it. I, for one, should desire it by either one or more engineers of high talent, and I have no doubt their opinion will be that the drainage works commenced, and partly finished, are operations of great interest and magnitude, and that much skill and design have been displayed in their execution; there may be a difference of views respecting certain points, but upon the whole I have no doubt as to the general design and plan of the works, although there may be defects in some of the details of the execution.

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389. As chairman of the Board of Works, is the measure which has now been suggested one which you would undertake to recommend?
Certainly; I should recommend it to the Treasury.

390. Have you prepared some papers for the Committee?
I have prepared some extracts from the documents which have been sent by the Board of Works to Parliament, which give the results of the present state of the several drainage works, classified into those which have been completed and awarded; those which have been completed and not awarded; those that are stopped for second assents, and those in progress; giving also the amount of the original estimates, and the amount now estimated for their completion.

391. Will you have the goodness to hand in those papers?

The same are delivered in, and are as follow:

RETURN showing the Amount of the original ESTIMATES, Amounts expended, &c., on the following Works:

Eleven Works Finished, but not Awarded.

	Amount of Original Estimates.	Expenditure to 30th September 1851, and Amounts required to complete.
No.	£.	£.
2. Ardee	8,388	19,703
62. Ballyteigue	18,000	32,330
189. Burren	26,469	25,373
161. Castlemartyr	5,060	7,030
47. Clonakilty	5,281	9,698
111. Derrylin	455	653
15. Dungolman	6,500	10,347
37. Rath or Cloneen	4,700	6,582
80. Sow	5,445	8,347
14. Turloughmore	23,700	50,681
44. Youghal	8,811	18,935
TOTALS £.	112,809	189,679

Eleven Works Stopped for Second Assents.

	Original Estimates.	Amounts expended to 30 Sept. 1851.	Amounts required to complete.	Total of Amounts expended and required to complete.
No.	£.	£.	£.	£.
27. Brusna (Ferbane)	47,329	53,726	24,793	78,519
19. Cappagh	8,531	9,101	12,691	21,793
38. Dunkellin	22,500	23,531	26,424	49,955
65. Fergus	44,762	26,845	25,524	52,370
36. Inny	34,994	25,235	26,638	51,874
41. Kilbeggan	10,397	17,439	10,357	27,796
78. Kill	2,689	2,351	100	2,451
170. Lavally	11,780	7,548	6,427	13,976
32. Loughs Gara, &c.	11,030	10,480	8,421	18,902
61. Rinn and Black River	18,388	13,371	10,818	24,190
82. Shanagolden	8,332	3,560	9,944	13,504
TOTALS £.	220,732	- - -	- - -	355,330

Twenty-eight

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Twenty-eight Works in Progress.

No.		Amounts of original Estimates.	Amounts expended to 30 Sept. 1851.	Amounts required to complete.	Total of Amounts expended and required to complete.
		£.	£.	£.	£.
172.	Balla	15,299	11,327	7,460	18,787
184.	Ballinamore and Ballyconnell	131,858	138,501	54,475	192,976
9.	Borris in Ossory	6,896	17,546	771	18,318
17.	Boyne	25,706	44,825	12,069	56,894
138.	Castlebernard	12,934	9,727	7,565	17,292
179.	Cross Lough	340	353	18	371
29.	Deel	9,883	15,885	2,001	17,887
164.	Dunmore	40,421	17,450	39,694	57,144
8.	Glyde	19,896	30,692	8,860	39,552
79.	Hind River	14,280	14,742	14,364	29,106
160.	Keenagh	9,026	5,150	4,195	9,346
54.	Kilbride	3,956	6,113	618	6,732
18.	Killimor	25,504	40,352	3,512	43,865
124.	Kilmaganny	8,597	7,833	1,691	9,524
109.	Leesborough	2,499	5,073	154	5,228
11.	Longford	14,288	19,058	12,501	31,559
53.	Loughans	1,802	3,385	277	3,663
183.	Lough Corrib	130,753	118,544	82,872	201,416
193.	Lough Lannagh	12,940	9,282	3,970	13,252
174.	Lough Mask and River Robe	173,909	23,381	40,000	63,381
68.	Lough Neagh	95,714	105,722	115,865	221,587
43.	Loughs Oughter and Gowna	51,969	45,652	57,837	103,490
176.	Monivea	15,919	8,050	16,444	24,494
59.	Quin	8,341	11,609	7,486	19,095
35.	Shinrone	3,908	7,859	219	8,078
20.	Shrule	10,302	22,854	2,009	24,864
10.	Strokestown	17,996	30,276	5,100	35,376
42.	Templemore	7,224	13,287	1,030	14,318
	TOTALS £.	872,160	- - -	- - -	1,287,595

London, 5 June 1852.

ABSTRACT showing the Amount of the original Estimates for ARTERIAL DRAINAGE WORKS in IRELAND; the actual Expenditure on the 71 finished, &c., Works, *a*; the Expenditure to 30th September 1851, and the Amounts estimated for Completion of the other Works, *b*, *c*, *d*; the Area by original and revised Surveys; and the Cost per Acre according to both Surveys, &c.

WORKS.	Amount of original Estimates.	Expenditure as per Heading.	Excess.	Increase per Cent. on original Estimates.	Area by original Survey.	Area by revised Survey, including Portion (119,018 acres) not yet revised.	Remarks.
	£.	£.	£.		Statute Acres.	Statute Acres.	
a. 71 Works complete and awarded	155,302	226,927	71,625	68·4			
b. 11 Works complete, but not awarded	112,809	189,679	76,888	59·5			
c. 11 Works stopped for second assents	220,732	355,330	134,598	62·1			
d. 28 Works in progress	872,160	1,287,595	415,435	67·7			
TOTALS	1,361,003	2,059,531	698,546	66·	288,253	335,597	

	£.	s.	d.
After deducting the moiety of the cost for navigation, which is a free grant, the cost per acre, according to original estimates and area, by original survey, is	4	5	–
And the cost per acre, according to revised area and expenditure, as in second column, is	5	14	7
Excess per acre £.	1	9	7

London, 9 June 1852.

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392. There are a number of large works as to which the proprietors for a considerable time hesitated to give their second assents, but where, taking, as they thought, the least of two difficulties, they have assented; but where still they feel considerable uneasiness, not being certain that their works are about to be finished in the most advantageous way: would it be desirable to extend the proposed inspection to works of that class?

I am aware that there are many in that state; some have been completed without the estimates, but not yet awarded, particularly the Dungolman, the Rath and Cloneen, in the county of Westmeath, and perhaps others under the same circumstances. In regard to the Rath and Cloneen, the proprietors express themselves very much satisfied with the result of the drainage; but I do not think that where the drainages have been completed and the awards made, it would be desirable to open up the question again.

393. A petition has been presented to this Committee respecting the Ardee drainage, which appears to have exceeded the estimate by a large amount; do you know the circumstances of that case?

I have never personally examined the Ardee drainage, but I know its history; it is one the estimate for which has been very much increased by gradual changes in the circumstances of the river since the works originally commenced, and chiefly in consequence of the drainage operations having been commenced in the upper portion of the same river, called the Nobber district, which in times of flood, since the works were completed, discharges rapidly an overwhelming volume of water into the lower country, so as to overtop the banks of the River Dee, the improvements on which had been previously completed; hence it became necessary to commence over again, and to extend considerably the scale of the original works on the lower portion of the river, and in consequence the expense has been materially increased.

394. What is stated is this, that the Board of Works first examined the whole of the district, and that apprehending a difficulty in getting assents, or finding that they could not get assents as to the works in the upper reach of the river, they made a survey of the lower reach of the river, and obtained there assets to complete the work; and that then, at a subsequent period, they obtained assents for the upper district; and that the result was, that they brought down so large a quantity of water, that it became necessary to treble the size of the original work in the lower district; and it is of that that the proprietors complain; and they say that, under all other circumstances, they would have their remedy by an action at law; but that the Board of Works are so fenced in by Acts of Parliament, that they have no remedy at all; can you give any explanation of that case?

With respect to the first portion of your Lordship's question, relative to the Board of Works having intended to undertake the whole district, and not a portion, I think there is some mistake, inasmuch as the proprietors of the lower district, and not the proprietors of the upper district, applied in the first instance for the improvement of their portion of the river: it was during the period of the distress in the year 1846 that the upper district applied for the improvement of their river, and the works were commenced under the Summary Proceedings in July 1846; whereas the other was commenced under the ordinary proceedings in July 1844, two years previously; but the lower or Ardee district has suffered materially from the execution of the works in the upper district, in consequence of their having been undertaken at different periods. Had the entire river been commenced at the same time, it is possible that the lower district might not have been so heavily taxed as it will be; but fortunately the lands are of superior quantity.

395. Do you think that there is any remedy in that case, except by an Act of Parliament?

There is no remedy but by Act of Parliament; the lower work was first contemplated, and after that the upper, and there is no law to force the upper district to pay for the lower work; there happens to be a considerable fall between the upper and the lower district; the only question is, whether the upper district has the power to pour down its waters, and flood the low lands; that is a legal point, which may be a matter of question.

396. And

396. And you think that cases of that sort must be met by legislation?
I think they must be met by legislation.

397. It is stated in one of the letters from the Commissioners of Public Works to the Treasury, that a sum of money has been recommended to be granted for drainage works in the county of Longford, and that it was withdrawn from that object, and was applied to public works; are you aware of that case?
I am aware of the circumstance, but it is a matter that could be explained at the Treasury.

398. It was stated, that it was withdrawn at the recommendation of the Commissioners of Public Works?
I suppose it was withdrawn because the drainage work was rejected by the Board, but I know nothing of the circumstance.

399. You stated in your evidence before the Committee on the Consolidated Annuities that you considered that the primary object at the commencement of the public works was the relief of distress; you do not consider that that applies at all to the works now under consideration?
No, except in so far as that some of the works which were commenced in the years 1846–7 under the Summary Proceedings Act were, on the application of the proprietors themselves, used indirectly as relief works.

400. You are aware that a very large portion of the land in Ireland is in settlement?
I am aware of that circumstance.

401. Then how is it possible to reconcile it with justice towards remaindermen and mortgagees, whose remainders and whose properties will be charged with the loans advanced for these drainage works, which were carried on to a certain extent as relief works?
As far as the relief works went, certainly it was to a certain degree a breach of the ordinary principles of the drainage works; but the Act of Parliament, the 9 Vict. c. 4, was specially passed for that purpose: it is stated in the preamble of the Act, that the summary powers of commencing without the usual caution and without detailed and accurate surveys and estimates being made, were given for the purpose of affording relief to the destitute, consequent on the failure of the potato crop; if there be anything wrong, the fault is in the powers given by the Act of Parliament, and with proprietors themselves, who petitioned that the works should be commenced under the Act.

The Witness is directed to withdraw.

Ordered, That this Committee be adjourned to To-morrow, One o'clock.

Die Veneris, 11° *Junii* 1852.

THE EARL OF ROSSE in the Chair.

MAJOR THOMAS AISKEW LARCOM is called in, and examined as follows:

402. ARE you now Deputy Chairman of the Board of Works?
I am.

403. How long have you held that appointment?
Since August 1846 I have been a Commissioner, and was appointed Deputy Examiner in April 1850.

404. Previously to that were you in the Board of Works?
No; before that I was employed on the Ordnance Survey; but during the operations for relief in the early part of that year, I was temporarily attached to the Board of Works, in conjunction with Mr. Griffith, now Chairman of the Board, but only in relation to relief; we had no other duties connected with the Board of Works.

405. Do you conceive that, as Deputy Chairman, you have any controlling power over the drainage department?
The duties of the Board of Works are divided into departments, as directed in a Treasury Minute of 31 August 1846, published in the Drainage Correspondence, p. 35. Under that Minute the drainage was entrusted to Mr. Mulvany, one of the Commissioners; but by a subsequent arrangement of the Treasury, that department was especially placed under the control of the Chairman, in addition to Mr. Mulvany. I have no immediate connexion with the drainage whatever.

406. That arrangement, placing that department especially under the Chairman, is rather recent, is it not?
It took place in the year 1848.

407. Do you happen to recollect the circumstance connected with Mr. Mulvany's appointment; what his profession was before he was appointed?
I understood he had been extensively employed on the Shannon before, but I was not acquainted with him. I found him in the position in which he now is.

408. Do you call Mr. Mulvany the Commissioner of Drainage?
No; he is now a Commissioner of the Board of Works; but the drainage was originally commenced under a separate Commission, of which the Commissioners of the Board of Works were *ex officio* Commissioners, and one additional Commissioner was appointed, who was Mr. Mulvany, and being the Commissioner at that time specially appointed for drainage, he was the Drainage Commissioner; afterwards when the Drainage Commission was consolidated with the Board of Works in 1846, Mr. Mulvany was appointed a full Commissioner of the Board of Works, the whole drainages being then transferred to that Board; and as he had charge of them before as Special Drainage Commissioner, it was natural that he should continue to be that Commissioner of the Board of Works who was entrusted with drainage under the Treasury Minute, and he therefore continues now to exercise the same duties with regard to drainage, that he did when the drainage was entrusted to a separate Board.

 409. Exclusively,

Major T. A. Larcom.

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409. Exclusively, or merely that as the person most acquainted with the business, it falls into his hands?

Naturally, from his having been the person in charge of it before.

410. But he has no special official charge of it, except that which naturally arises from his being the member of the Board most acquainted with the subject?

By the directions of the Treasury all the duties of the Board are allocated specially among the Commissioners, and by a Treasury Minute of the 29th September 1846, which will be found in the Correspondence, at page 38, the special allocation of the duties of drainage to Mr. Mulvany, after he became a full Commissioner of the Board of Works, was approved by the Treasury.

411. In point of fact, he has of late years wielded the whole authority of the Board as regards drainage, has he not?

He has had the sole charge of that department.

412. Does he refer an account of it to the Board generally, or does he correspond directly with the Treasury?

He does not correspond directly with the Treasury; all correspondence with the Treasury takes place from the Board as a body, and all correspondence with the country is in the name of the Board generally. I, myself, for instance, have charge of the construction of piers and harbours, and the custody and care of all the roads and bridges which have been made by public money; within that department my actions are the actions of the Board, *i. e.* the executive control vests in me.

413. Do you account to the Board?

Certainly; these are arrangements within ourselves for the despatch of business; so far as the public is concerned the Board is one.

414. Practically do the transactions of the several Commissioners entrusted with special charges pass under the notice of the whole Board, or do they merely officially go in their name?

They do in difficult cases; the rule is, that all origination of projects and all steps of considerable importance brought before the Board at their daily meetings, and the execution of those projects rests with the special Commissioner. I can speak with most familiarity of my own case. No application for a pier would be entertained or sanctioned, nor the authority of the Treasury asked for the erection of it, until the Board had approved of the project, which would be brought before the Board by me, after I had considered the application and had received the necessary reports and estimates on the subject. When we have procured the sanction of the Treasury the execution of that work devolves upon me, but if difficult cases arise in it, or if an excess of estimate is necessary, it is my duty to bring it before the Board.

415. In like manner as to drainages; are schemes for drainage practically brought under the notice of the Board before they are approved and carried out?

I believe no new projects have been undertaken since the Board has been in its consolidated form; we have done little more than carry out what was orginally decided upon, except those which grew out of the relief operations under the Summary Proceedings Acts.

416. In deciding upon those, did you, as a member of the Board, practically consider the probable accuracy of any estimate laid before you; did you go into details to enable you to judge?

The greater part of them began before I was a member of the Board, and Mr. Griffiths and I were in the years 1846 and 1847 so engrossed with other duties, that we were unable to give much attention to general business.

417. In the case of your own works, do you test the qualifications of the parties who are to execute them; are you answerable for that?

Yes, I feel that I am.

418. Does Mr. Mulvany test the qualifications of the parties who are to execute the drainage works?

I apprehend he does.

419. By testing qualifications, we mean whether they are competent to discharge the duties?

Certainly; it would be my duty to see that they were so; I should also explain, that under the Commissioners there are Chief Engineers for different branches of the work; we have an engineer specially devoted to piers and harbours, and to tidal works of that class, Mr. Gibbons, a man of great ability.

420. Have you also a Chief Engineer for drainage?

Mr. Mulvany himself having been the original Commissioner of Drainage, naturally reserves in his own hands the principal supervision of all projects of that class; but there is a principal engineer for each drainage, or for two or more if they are inconsiderable.

421. Are your works carried out by contract or by measure and value?

Sometimes in the one way, and sometimes in the other. I have brought here a list of several of the piers which have been executed under my own direction, in some of which we took tenders from contractors and executed them by contract, and in some of which we did not. If the Committee will allow me to read a part of it I will put it in. For instance, in the case of Knightstown Harbour, in the county of Kerry, the estimate was 2,700 *l.*; we took tenders from three parties here named, one for 5,059 *l.*, double the estimate; another for 2,764 *l.*; another for 2,500 *l.*, which latter tender was accepted, but after a long delay and no progress made, the contractor begged to be released, and it was deemed advisable to comply with his request. The work was then proceeded with under the Board's officers, and completed with substantial improvements in addition, at a gross expenditure of 2,569 *l.* It would therefore have proved disadvantageous to have executed that work by contract. In another case, of a larger nature, at Newcastle in the county of Down, the estimate was 8,950 *l.* Three tenders were received, one for 12,262 *l.*, another for 14,000 *l.*, and another for 17,000 *l.* These tenders being considered excessive, the Board ordered the work to be proceeded with by day labour, and measurement, as far as it could be applied. The situation is one of extreme exposure, and considerable loss was sustained by damages from storms during its progress, while it was in a very vulnerable condition. It has been computed at a gross expenditure of 9,400 *l.*

422. The original estimate being 8,950 *l.*?

Yes, it was a little exceeded. In another case, the principal proprietor, Lord Annesley added to his contribution, and the Treasury increased the grant in the same proportion. Mountcharles Pier, in the county of Donegal, on an estimate of 2,675 *l.* tenders were received for 2,649 *l.*, for 3,540 *l.*, for 3,130 *l.*, and for 3,272 *l.* It was not considered advisable by the Board to accept the tender which alone came near the estimate, and the work was completed in a superior style under the Board's officers at a gross expenditure of 2,100 *l.*, the estimate having been 2,600 *l.*, and there are many other cases of the same character.

The Witness delivers in the following Document:

"KNIGHTSTOWN HARBOUR, COUNTY KERRY.

	£.	s.	d.	£.	s.	d.
Estimate - - - - - - - - - - - -				700	–	–
Tenders from Contractors, viz.:—Ryan, Son, & Thomas	5,059	18	2			
Nath. Godson - -	2,764	14	–			
M. Fitzgerald - -	2,500	–	–			
The latter tender was accepted, but after a long delay and no progress made, the contractor begged to be released, and it was deemed advisable to comply with his request: the work was then proceeded with under the Board's officers, and completed with substantial improvements in addition, at a gross expenditure of - - - - - -				2,569	–	–

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	£.	s.	d.
Newcastle Pier and Breakwater.			
Estimates	8,950	–	–
Tenders:—C. D. Lonigan	12,262	–	–
Killeen & Moore	14,000	–	–
Wm. H. Smyth	17,000	–	–
These tenders being considered excessive, the Board ordered the work to be proceeded with by day labour and measurement, as far as it could be applied. The situation is one of extreme exposure, and considerable loss was sustained by damages from storms during its progress, while it was in a very vulnerable condition; it has been completed at a gross expenditure of	9,400	–	–
Mount Charles Pier, County Donegal.			
Estimates	2,675	–	–
Tenders:—A. Graham	2,649	–	–
Wm. Colgan	3,540	–	–
R. Lamber & Son	3,130	–	–
John Cosgrave	3,272	–	–
It was not considered advisable by the Board to accept the tender which alone came near the estimate, and the work was completed in a superior style under the Board's officers at a gross expenditure of	2,149	–	–
Ballyness Pier, County Donegal.			
Estimate	640	–	–
Tender:—Hugh Hart	1,154	–	–
Executed by day labour; gross expenditure	639	–	–
Ventry Pier, Slip and Basin.			
Estimate	2,200	–	–
Tenders:—Ryan & Co.	2,998	18	2
William Collier	2,200	–	–
Nath. Godson	1,894	10	6
The latter tender was accepted, but the contractor totally failed in proceeding with the work, and it was finally executed by the Board, at a gross cost of	2,235	–	–
Dingle Pier.			
Estimate	3,000	–	–
Tenders:—Ryan, Son & Co.	3,616	3	11
N. Godson	2,511	4	6
The contract was made with Mr. Godson, who failed to execute it; completed by the Board; expenditure	2,913	–	–
Portnahluhy Pier, County Donegal.			
Estimate	1,900	–	–
Tenders:—James Brittain	2,875	–	–
R. Lawler & Son	2,700	–	–
These tenders being inadmissible, the work was proceeded with by the Board by day labour, and completed at a gross expenditure of	1,717	–	–

	£.	s.	d.
KILMACKALOGUE PIER, COUNTY KERRY.			
Estimate	2,200	–	–
Tenders:—Ryans & Thomas	3,732	3	7
P. Molony	2,100	–	–
N. Godson	1,892	–	–
The latter accepted work not being proceeded with by the contractor within the time specified, was taken up and executed by day labour under the Board; gross expenditure	1,897	–	–
BALLYCOTTIN PIER, COUNTY CORK.			
Estimate	2,840	–	–
Advertised. No tenders. *See* Board's Letter of 27 April 1847.			
Executed by day labour; expenditure	2,781	–	–
BUNOWEN PIER, COUNTY KERRY.			
Estimate	6,400	–	–
No tenders received.			
Executed by Board's officers; gross expenditure	5,843	–	–
DUNCANNON PIER, COUNTY WATERFORD.			
Estimate	6,000	–	–
No tenders.			
Executed by Board; expenditure	5,288	–	–
CAURTOWN, COUNTY WEXFORD.			
Screw Pile Jetty	4,400	–	–
Contract made with the patentee, and work executed within the Estimate.			
GREY STONES PIER, COUNTY WICKLOW.			
Estimate	1,200	–	–
Contract made within the estimate, and work satisfactorily executed.			
ROSSROE, COUNTY GALWAY, PIER AND ROAD.			
Contract made in 1848; not yet completed.			
CLADDAGH, GALWAY.			
Estimate	4,000	–	–
Work contracted for within the estimate, and fairly completed.			
KILKERRIN, COUNTY GALWAY, PIER AND SLIP.			
Estimate	3,000	–	–
Work contracted for within the estimate, and completed satisfactorily.			

423. Was the execution of the works which were executed not by contract, but under the superintendence of the Board, attended to by yourself?
By the harbour engineer, under my direction.

424. But in the case of arterial drainage, Mr. Mulvany acted as chief engineer, and had no chief engineer under him?
Mr. Mulvany was practically conversant with the details of all of them; but upon each drainage there was an engineer of consideration, and receiving a

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considerable salary; whereas, in these smaller works, by having one harbour engineer for the whole of them, we were able to employ upon the works themselves very subordinate and much cheaper parties. I had one engineer for all the harbour works, while Mr. Mulvany had an engineer upon each drainage, by whom the estimate was made; they were not concentred under one chief engineer; they are much larger works.

425. The general work of supervision was executed by himself?
It was, by dint of great personal labour.

426. Such supervision as was analogous to that executed in your own department by your chief engineer?
I apprehend nearly the same, with an engineer for each work, in consequence of the greater magnitude of the drainage works.

427. Who recommends and approves of the staff for carrying out drainage works?
They come before the chairman with the recommendation of Mr. Mulvany, the Commissioner in charge.

428. Practically speaking, is his recommendation conclusive; is he solely answerable?
The Chairman does not usually object to any recommendation brought before him by the Commissioner in charge of a department; but it is necessary to obtain the sanction of the Treasury to the appointment before it is made.

429. Was Mr. Harding, the principal valuator, appointed at Mr. Mulvany's recommendation?
He was, to the position he now holds, but he had been employed before as valuator, though not paid a salary; he had been paid by the day, or by the work he had executed; and the reason represented for putting him on a salary was, that it would be cheaper to pay him a salary for all, than to pay him work by work.

430. The Irish Government has no control over the Board of Works?
No; the Board of Works is wholly a Treasury Board. But it is necessary I should explain, that although the Board of Works proper is wholly a Treasury Board, it exercises the functions of a great many other Boards which no longer exist; such as the Commissioners of Kingstown Harbour, the Commissioners of Dunmore Harbour, the Inland Navigation Board, the former Board of Works, and some others. They were, by the Acts which constituted them, under the Lord Lieutenant; and the Board of Works in the execution of those duties, therefore, is under the Lord Lieutenant, and acts by the orders of the Lord Lieutenant. We are Commissioners of Lunatic Asylums. The Shannon Commission has devolved upon us. We have also the erection and care of Government Prisons, of the Queen's Colleges, and the College of Maynooth, as well as of public buildings generally. Under the Railway Consolidation Act, our duties are analogous to those of the Railway Board and Board of Trade in England. But in all these duties, though some are by Act of Parliament under the Lord Lieutenant, we require the sanction of the Treasury also, because they alone now provide the funds.

431. Fisheries?
Yes, fisheries also, both inland and maritime.

432. Instead of parties having the security that they have under a Private Act in England, in the personal interest of the Committee under the Act, they have, in fact, the security that the Board of Works is under the supervision of the Treasury?
Quite so.

433. How is the supervision of the Treasury exercised over the Board of Works?
In controlling the supply of our funds, in the appointment and removal of all the officers, from the Commissioners downwards, and ultimately in the audit of the accounts of all the expenditure made under their sanction.

434. Will you have the goodness to state how they control the supply of your funds?

The

The greater part of the funds with which the works are executed are derived from grants of Parliament placed in the hands of the Treasury to be issued for purposes specified in the Acts which grant them, in such proportions, and at such times as their Lordships may think fit. It is, then, our duty, when we require money for any particular work, so provided for by Parliament, to represent that to the Treasury, and their Lordships, if they approve, sanction the issue of the money.

435. Will you state the mode of representation to the Treasury. What are the steps by which you arrive at that point at which the representation is handed into the Treasury, and what points are required by them to be answered before they issue the money; the question refers to actual drainage only?

When a drainage is undertaken, there are certain preliminary proceedings which are gone through.

436. What are those proceedings?

The first application for the drainage is received from the proprietors interested in that drainage, who undertake to pay the expenses of the preliminary survey which is necessary. That survey having been made, and the estimate prepared, it is considered by the Board, and it is then printed and laid before a meeting of the proprietors, convened for the purpose, who, if they continue to wish that the work be carried on, express their assent.

437. What is the proportion?

If the proprietors of one half the extent of lands to be drained continue to wish that the work should be carried on, the process in that stage is complete, and the Board undertake it and proceed to provide funds.

438. Is it extent and value, or extent only?

Extent of acres only. Then the work is a drainage project, and it becomes the duty of the Board of Works to provide funds, either by raising money from private parties on debenture, or by applying to the Treasury for loans; these loans were originally made from the Public Works Loan Fund, which is a fund provided by Parliament of 60,000 *l.* a year, but which having been of late years insufficient for the drainage, has been for that special purpose reinforced from time to time, with additional sums by Parliament, the last of such grants was of 800,000 *l.*, in the year 1850.

439. You stated that that was in default of private sources?

In default of private sources, because it was originally intended that the works should be carried on by private funds.

440. Will you explain how those private sources are raised?

By money raised on loans from any parties who choose to lend it on the security of the lands to be drained, for which debentures are then issued, bearing interest at 5 per cent., and to be paid off out of the first repayments received from the lands benefited, after the completion of the works, and the final award by the Commissioners.

441. Is any attempt made to collect this money by private debentures before application is made to the Treasury?

In some instances, I think, advertisements have been put in the newspapers for it; at this moment there is an advertisement in the Irish papers for money to be raised on debentures for a drainage in the North of Ireland, the Quoile drainage.

442. With whom does the option of that mode of raising money rest?

With the parties who lend it, I apprehend.

443. With whom does the option of raising the money by debentures rest?

It is the duty of the Board of Works. I am speaking, however, in this matter, save only in the case I have mentioned, altogether of times gone by, because the works which are now in progress, and which are shown on that map in red, were begun several years ago; they were suspended from the want of money in the year 1848, when there was a great commercial panic, and subsequently resumed by Government Grants, because the private funds had failed, the country was not in a state to advance money.

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444. At what rate do the Government lend the money?
They lend the Government money at 4 per cent., but 5 per cent. is paid on the private debentures. Originally the Government money was also lent at 5 per cent., but it was subsequently reduced to 4, the correspondence relating to which is to be found in the published volume on your Lordships' table; all lent since that date is at 4 per cent.

445. Four per cent. is the lowest?
Yes.

446. Is there any provision for repayment?
The Government have consented that the private debentures shall be paid off first.

447. Is there any period of years in which a sinking fund is to be laid by for the discharge of the advance?
No; as money comes in, the debentures are paid off in succession, and when they shall have been all paid off, the repayments to the Exchequer of the Government Loans will begin. Many debentures have been paid off, as is shown in a Table at the end of the second part of the volume of Correspondence, in a return from Mr. Grey, the Paymaster of Civil Services.

448. In applying to the Treasury for money, do you apply for money for one particular work, or in a gross sum?
We apply for each particular work; but it generally happens that several are contained in a Schedule; the account, however, for each separate work is a complete account, both in its credit and its debit.

449. It is applied for to the Treasury as a separate work?
Quite so.

450. And are the estimates handed in to the Treasury?
The requisitions of the Board for the money go to the Treasury; the Treasury do not require the executive estimates of the works themselves; they do not go to the Treasury. We are in possession of the estimate for the execution of the work which has been laid before the proprietors, and we apply to the Treasury from time to time for the money which we require to carry it on, out of the funds placed at their disposal by Parliament for the purpose, but we do not send the working estimates to the Treasury.

451. For instance, let us take one of the estimates in this Return; the first case is Ardee, of which the estimate was 8,388 *l.* and the acreage 3,240; in applying to the Treasury for that amount, is it stated that you require 8,388 *l.* for the drainage of 3,240 acres at Ardee, or is it stated generally for drainage purposes?
It would be stated distinctly that the money was wanted for the Ardee drainage. I apprehend that in that case of Ardee, they begun upon private debentures; and it was suspended, I think, in the year 1848, in common with nearly all the other works at that time. The estimates which your Lordship has before you, I think, are estimates which were prepared from time to time for the Treasury, giving the sum that would be probably wanted for the completion of each work, and thereby showing the gross sum for which it was necessary to apply to Parliament.

452. This is the return of last year of all the works which have been commenced, and the state of them?
Similar returns have been made to the Treasury from time to time for their information, which will be found in the volume before you. Whenever it became necessary to apply to Parliament for more money, the Treasury required from us an estimate of the sum which we required for each work, and the total sum.

453. Did the Treasury require from you a statement of the works, or did the Board merely say, "We want 8,388 *l.* for drainage at Ardee"?
The application to the Treasury would be for the specific work, and for the exact sum required.

454. And stating the estimate?
I am not able, of my own knowledge, to answer, in regard to the first applications;

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cations; because, as I said before, the first applications to the Treasury were made before my time. I only took it up at a late stage of the case, after the works had all been begun, and many had been stopped; and then we had to recommence them, and apply to the Treasury for the sums necessary for their completion. But you will observe, at page 5 in the volume of Drainage Correspondence, there is an application by the Commissioners of Public Works to the Treasury, for a loan, to carry out the drainage of the Blackwater District, which is dated the 20th of April 1844, and runs in these words: "On behalf of the proprietors of lands interested in the improvement in the Blackwater District, counties of Meath and Kildare, under the Drainage Act, I am desired by the Commissioners of Public Works to apply for the sanction of the Lords Commissioners of Her Majesty's Treasury for a loan of 10,000*l.*, out of the Public Works Fund, to carry out the proposed improvement. This district contains 3,851 acres of flooded and injured lands, and by an expenditure of 10,000*l.* it is estimated that their value will be increased 904*l.* 10*s.* per annum; the cost of masonry for bridges and such works, amounting to 1,859*l.* 10*s.*, and included in the sum of 10,000*l.*, are chargeable to the counties of Meath and Kildare. By a reference to the accompanying Schedule (A.)," which is a list of proprietors, "their Lordships will be enabled to form a better opinion as to the nature of the undertaking, and the direct or primary security proposed to be given. The column in that Schedule, under the head of 'collateral security,' shows the proposed extent of property which the Act declares shall, (subject to all incumbrances thereon prior to the final award) be taken as part of the security; but as the Board have at present no means of knowing the extent of the encumbrances which do, or may at the time of the final award, affect this collateral security, it is not relied upon as at all valuable in the proposed loan, although it may, and in several cases will, the Board believe, be found of considerable value. Under the respective heads in the same Schedule are stated the respective portions of land to be improved, held by each proprietor, with an estimate of the sum for which he will be made responsible by the Commissioners' final award. By the terms of the Act, the present value of the land to be improved is to be fixed, and prior incumbrancers can only have precedence of the Commissioners' charge. In submitting this loan to the consideration of their Lordships, the Commissioners think it right to state that an effort has been made to obtain the necessary advance from the Bank of Ireland; but upon reference to the Solicitor-general, who was selected as the Bank counsel, he was of opinion that their charter did not authorize them to make a loan on security of this nature, as will appear from the Case, No. 1, herewith submitted." "The Board forward this application for their Lordships' sanction, in consequence of the importance of making a commencement of the works at this time, so as to prevent the loss of the whole season. They have endeavoured to carry out what they consider to be the views of the Legislature, by obtaining the application of private funds to such undertakings; but owing to objections, as before stated, to the security, which are really of minor importance, there is a reluctance on the part of capitalists to embark in them until the Act is amended. It was not the original intention of the Board to have recommended their Lordships to sanction loans for drainage works, generally speaking, to a greater extent than a moiety of the estimate, being guided in their views in this respect by the spirit of the Public Works Acts, which limit, in almost all cases where there are private profits, to two-thirds of the amount, however favourable the security may be. In the case of loans for reclaiming lands, under the Public Works Act, although the whole sum is allowed to be lent, still the conditions are of so stringent a nature that but one or two loans have been made for such objects." That is a very full application.

455. When you refer to the conditions being too stringent; you refer to those conditions, we presume, on which loans were, in certain cases, issued under the Public Works Act, for the improvement of land?

I believe so; this letter is of a date earlier than my connexion with the subject.

456. Upon that application the money was advanced?

It was so; by a Treasury Minute of the 17th May, page 13, "My Lords are

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are pleased to sanction a loan to the Commissioners of Drainage, not exceeding in amount the sum of 10,000 *l.* on the terms proposed by the Commissioners of Public Works. Acquaint the Commissioners of Public Works, and direct them to issue certificates on the Commissioners of the National Debt, in the usual manner, for the advances thereon, which may, from time to time, be required; my Lords holding them responsible that in making this loan to the Drainage Commissioners, they will take care that the said Commissioners shall make all such necessary searches, and take all such necessary precautions with respect to the securities, as they, the Commissioners of Public Works, would, in their judgment, consider requisite in any other case."

457. Does it state there the interest?

It is covered with the word "securities;" there is no special mention of the interest; that was fixed by the General Act, under which the Public Works Loan Fund was provided.

458. Can you follow out that Blackwater case; the expenditure there exceeded the estimate by 2,100 *l.*?

It did; I am not familiar with the particular circumstances of that drainage, but I have always heard it spoken of as one peculiarly satisfactory; indeed I happen to know that Mr. More O'Ferrall, who is the party principally concerned, is exceedingly well satisfied with it, and will be ready to testify so to your Lordships.

459. On subsequent application you got more money from the Treasury; the sum is 12,115 *l.*?

I think that work was extended with the concurrence, or at the application of the proprietors, and I have no doubt the letters could be furnished showing that an application was made to the Treasury, representing the circumstances which rendered the original money insufficient, and requesting a further advance from their Lordships. I have no doubt the circumstances which led to the excess were explained to the Treasury.

460. The principles on which the drainage operations are to be carried on are laid down clearly in the Second Report; you will observe that all the principles upon which the estimates are to be made are there laid down?

Yes; under the head of "Estimates of Cost of Works, and Valuation of Lands."

461. If you will turn over, you will see the principles upon which the valuation is made, and if you will refer further to the First Report, page 4, you will find it there laid down that the works were not to be undertaken, at least in the beginning, unless there was a prospect of a clear profit of 10 per cent.

Yes; the words are, "We would not be disposed to recommend, or undertake works, at least in the comencement, for which a probable permanent return of 10 per cent., or more, on the whole expenditure, would not be had." This is the Report for the year 1842, I think.

462. Is not the definition given of an estimate, in the Second Report, very much the definition which would be given of an estimate which a contractor would make for his own guidance?

The contractor would have to take a large item for risk, and also a large item for profit; but this estimate is an estimate for actually doing the work, minus those two large figures.

463. Then if a contractor added so much for risk, and so much for profit, that would be what he would contract to execute the work for?

Just so. It is also to be borne in mind, that there would still be an addition to be made, of which the contractor would not be cognizant, namely, the interest of borrowed money and expenses of law, and the previous examination, survey, and valuation, as well as the ultimate valuation for award. I am able to say, that on an average, the law expenses, and costs of compensation for mills, weirs, and other charges of which the contractor would not be cognizant, amount, on the whole, to 12 per cent. of the expenditure.

464. Does not that estimate purport to cover all expenses of that sort?

The contractor would include only such as the engineer himself would be aware

aware of, and there would be additions to be made in Dublin which the contractor could not make.

465. That is the estimate which is to be laid before the proprietor who is about to assent to the execution of the work?

In the estimate to be laid before the proprietor, the charges which I have spoken of would be added before it was laid before him, so far as they could be themselves made the subject of estimate; but some of them, as compensations for damages, and mill power, for example, are very uncertain. We sometimes think a few thousand or a few hundred pounds sufficient compensation for a mill, and the miller appeals to a jury, who perhaps give ten times as much.

466. You have not, in the Drainage Acts, the same power which you had in the Shannon Act, of dealing with questions of compensation?

No; there were Courts there specially held, empowered by the Act; the Commissioners held Courts themselves; there is no such power in the Drainage Acts.

467. Do you remember the difference made in the provisions of that Act between the amount claimed and the amount paid?

I am not familiar with the working of the Shannon Act, for I have had no connexion with it.

468. It was nearly tenfold; 700,000 *l.* was claimed in compensation, and the amount awarded and acquiesced in was about 70,000 *l.*?

I have no doubt.

469. In the compensation which you have had to award under the drainages, through the old system of juries, have you had cases to encounter in which the compensation very greatly exceeded the best estimate that you, as Commissioners, could form of the real damage done?

We have; many such cases have come before us; but I am not able to quote them from memory; they are all distinctly stated in the official records. I remember one in Wexford, and several in Mayo.

470. Leading to a great excess of charge beyond what would, in your judgment, be reasonable?

Certainly.

471. And that arose from the mode in which the Act of Parliament was drawn, and not from any step taken, or omitted to be taken, by the Commissioners of Public Works themselves?

I presume so.

472. Practically speaking, do you think that the works have been carried on conformably to the principles laid down in the Second Report; the question alludes to the estimates and valuations?

I have no reason to doubt their having been so; the Commissioners adopt every reasonable precaution to assure themselves that the works may be executed within the estimates. I speak of this, however, in the greater number of cases, more as a matter of history than from my own knowledge; but I do not see any reason to doubt that at the time the estimates were made they were thought to be fair estimates.

473. Supposing that was done, can you account for the great excess, the works occasionally exceeding the estimate two and three times?

The average excess is about 50 per cent.; I can only suppose that it arose from difficulties which occurred in the course of the works; no doubt also, as a general question, very much owing to the unfortunate suspension of the works in the year 1848, from the want of money in England; many of them were suspended for two years; nearly all, I believe, for two winters; entirely unprotected, unfinished, the banks often washing away, and, in some cases, I believe, the works, when resumed, literally in a worse state than they were when they were originally begun.

474. Those were works of a nature peculiarly liable to suffer from such suspension?

Yes.

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475. Are you aware that one great cause of the excess over the estimates was, that the plan was completely changed in many cases; that works were executed upon a much larger scale than was originally intended?

I do not know any case in which the plan has been entirely changed. The changes were gradual as difficulties arose, but there are several in which it was found necessary to execute portions of the works on a more extended scale than was originally intended.

476. Merely as an example, we will take the case of Brusna drainage, which has been petitioned upon; we take that as an example, because, in the 19th report it is put forward by the Board in some degree as a sample of the difficulties which they had to encounter, and the way in which they had encountered them, and no doubt the result is a fair specimen, perhaps a favourable one, of their system. A correspondence has taken place respecting that work, which has been printed, and is before the Committee: have you read that correspondence?

I have.

477. That correspondence consists, first, of complaints to the Treasury from the landed proprietors; secondly, the answer of the Board of Works; thirdly, a comment by the proprietors on the Board of Works' answer, and finally, a rejoinder by the Board of Works?

Just so.

478. You observe that the survey of that work was commenced in July 1844?

I believe it was about that time.

479. Before you were connected with the Board?

Yes, the applications appear to have been received on the 28th of May 1844.

480. The survey was commenced in July 1844. It appears in that correspondence which you have read, that the survey was completed in the summer of 1845; and it appears further that the work was commenced in the autumn of 1846?

Yes.

481. That work then, we presume, was commenced deliberately?

I believe, though the surveys were made, they were not finally resolved upon till the time at which the works under summary proceedings, which were made ancillary to relief, were in operation, and when, perhaps, less deliberation was applied to them than would have been if they had been begun earlier.

482. It appears that the survey was completed more than a year before the work was resolved upon?

Yes, it was so.

483. And any delay was on the part of the Board of Works, not the proprietors?

Yes, under the circumstances I have described.

484. After the survey was completed, the Board had one year for considering it?

Such appears to be the case.

485. Do you think that they had ample time, and that that was a favourable case to take as a specimen of what they could accomplish?

From 1845 to 1846 was a period of very great activity on the part of the Board in another cause; the famine of 1845 had begun, and the arrangements which were thought necessary to meet it were then in operation, so that it was a period at which the Board was wholly occupied, before, however, I joined it as a Commissioner.

486. It would appear from that correspondence that there was a meeting to obtain assents, and the proprietors allege that at that meeting Mr. Harding, on the part of the Board, gave them the strongest assurances that the work would be executed for the estimate, assurances which they say they considered as a distinct pledge, which he had no legal right to give, no doubt?

I believe that is controverted in the replies of the Board.

487. At page 11 we have Mr. Harding's explanation: "The gentleman who attended (Mr. Harding), denies that he ever made such an assertion as that, 'under no circumstances could the estimate be exceeded;' on the contrary, in conformity with the published opinions of the Board (*see* extracts from annual reports), when asked for a guaranty, he states he replied that no guaranty could be given; that in such matters the proprietors must, if they wished to go on with the works, rely on the character of the Board." Do you think that that is, to a certain extent, at least, an admission of the statement which has been made by the proprietors, that at any rate there was something like an understanding, that there was no danger that the work would exceed the estimate.

It rested on the character of the Board, as is there stated.

488. This statement, you observe, of Mr. Harding's has been made in the rejoinder of the Board?

Yes.

489. And it is rather important to remark that this charge or statement, on the part of the proprietors, was unanswered, in the first instance, by the Board: that appears in the original statement; then comes the Board's answer, not taking any notice of it; then comes a reiteration of the same statement by the proprietors, and rather apparently in stronger language; and then comes the explanation of Mr. Harding in the rejoinder of the Board, he having the last word?

The last paper has been drawn up since I left Dublin, but the reason for its not being specifically answered in the first, I apprehend, was, that it was a matter of course. It is always understood, and has been repeatedly stated in every quarter, that no guaranty can be given, simply because it is not in the power of the Commissioners to give any such; they are bound to the debenture holders and to the Government, from whom they borrow money, that, to the best of their ability and belief, the works will afford security for the money, as well as to the proprietors, that the expense shall be as low as possible, consistently with that object, such, to the best of their belief, as is shown by the estimate; but it is not in the nature of things that either the one or the other can be a positive guarantee. I think it a great misfortune that the estimates have been so generally exceeded; it is very prejudicial to the Board, and which, is far more important, to the country also, by shaking public confidence in works which undoubtedly are of a very useful character, and peculiarly wanted in Ireland.

490. In reference to another work, but in consequence of your answer, in which you have stated that the Board never gives a guaranty, will you have the goodness to look at that letter [*handing a letter to the Witness*]; that is not a guaranty as to excess of expenditure?

This is from the Secretary of the Board, dated 11th September 1847: "In reply to your communications of the 6th instant, relative to the Derryholmes District, I am directed to inform you that it is not proposed to confer any benefit on the lands of Derryholmes; they will not, therefore, be subject to any taxation in respect of the drainage works in the Derryholmes District." I do not see how it bears on the question.

491. That is a guaranty that this gentleman, provided he assented, would have no part of the expense to pay, is it not?

I see no question of assent, but I should like to see the communication to which it is a reply; it begins, "In reply to your communication I am directed to inform you."

492. The communication was a communication from him, objecting to give his assent to the work; he received that in reply, and subsequently the Board stated that it was an imprudent guaranty; that it was contrary to law, and the lands of Derryholmes were charged with their fair proportion?

Without seeing the whole correspondence, I am quite unable to answer; I see nothing in this letter, without the correspondence, to which I can give an answer at all.

493. Do you consider that rather in the light of a communication of a matter of fact?

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It appears to me to be so: "As it is not proposed to confer any benefit on the lands of Derryholmes, they will not be subject to any taxation."

494. But if a man, upon such a statement of facts, gave his assent to a work, and if he afterwards was taxed, do you think that would be a matter justifiable in honour, or equity, or general law?

If it was not originally supposed that the works would improve his land, his assent being merely required to pass through his land, perhaps, and that subsequently it was found that his land had derived improvement, I think it would not be consistent with equity on his part to plead this letter written under a contrary impression for the purpose of evading his just share of the payment. But the case is new to me; and I am sure your Lordships will see that I cannot answer satisfactorily unless the whole correspondence and circumstances were before me. The Commissioner on whose minute the letter was written is the proper person to explain it.

495. Leaving Mr. Harding's guaranty and explanation, we find that the original estimate for Brusna was 47,329 *l.* 11 *s.* 8 *d.*; it appears in the correspondence as a work to be executed under the estimate. Then it appears that the estimate is 45,839 *l.* 15 *s.* 8 *d.*, about 2,000 *l.* under the original estimate. The next time it appears as a work to be executed above the estimate, namely, for 53,593 *l.* 0 *s.* 2 *d.* Then, again, it appears as a work to cost still more, 57,066 *l.* Then comes the Parliamentary Return, which shows an expenditure of 35,000 *l.*; it seems to have progressed 5,000 *l.* towards completion. Then comes the last estimate of 76,000 *l.* Are you aware of the principal grounds which the Board has assigned for this great excess of expenditure over the estimate from reading the correspondence?

The whole of those questions will be most advantageously answered by the Commissioner in charge, who has been cognizant of those estimates, and the causes of their excess, from time to time.

496. The Board's engineer states, "This excess is caused, in the first instance, by a complete change in the original proposed measure, substituting for a great portion of the length of the district a new river-course, instead of following the old one, as formerly intended." Are you aware whether that change was made with or without the consent of the proprietors, who were to pay for it?

I am not myself cognizant of the circumstances.

497. Was it prior to your connexion with the Board of Works?

No, I believe not; but I do not think it was brought before the Board. The Commissioner in charge of the work is no doubt able to speak to the subject.

498. What means have you of testing the proceedings of the different engineers who make these reports to the Board?

Of the drainage engineers, very little, because, as I explained in answer to a former question, the Commissioner in charge of the drainage has the entire control of that branch of the work, and the authority placed over him is the chairman of the Board. There is very little relating to the drainage which comes before the Board at all. Recently, however, an order has been given by the Board that no important change shall be made without an order in writing signed by the secretary.

499. Who is the chairman?

Mr. Griffith.

500. Then it rests entirely between him and the General Drainage Commissioner?

Yes; Mr. Mulvany.

501. But you have read the correspondence?

I have.

502. And that point is especially discussed. You see that the proprietors allege that this change of plan was made without any application to them, or without their knowledge?

Yes; it is so stated.

503. You see that that statement of the proprietors is not controverted by the

the Board; can you doubt, therefore, but that this change of plan was made without the knowledge or consent of the proprietors?

It certainly is not stated that they were consulted.

504. Do you think that the Board were justified in taking that step without first consulting the proprietors?

That is a question of great difficulty and great delicacy. I think that when any change of plan is made, or any unforeseen expense is to be incurred, it would be quite right to make the proprietors aware of it, and to convince them and satisfy them of the necessity which had arisen for these changes; but the difficulty in doing so is, that if they object, you cannot be bound by their objections. If you consider the change indispensable, you are still compelled to go on and to complete the work to the best of your judgment for the good of all the parties concerned. You would, therefore, be placing yourself and them, assuming that they still continue to object, in a false position, you would be asking their agreement in a thing in which you might not be able to defer to their opinion afterwards; it would so appear. I do not say that practically it is so. I have never found a case arise in which, after proper consultation with the parties interested, and pointing out the circumstances in which the case stands, they will not go with you and consent to the change; but I can easily conceive that there may be very great difficulty in it, because you are putting both yourself and them in a false position. You are asking opinions, and asking a concurrence which, if withheld, you may not be able to respect.

505. Although there might be a doubt about placing yourself so far in the the power of the proprietors as you have suggested by your reply, in respect of charges for the reasonable amount of excess of estimate, which upon all works, more especially drainage works, must be anticipated by all parties, and taken for granted as part of the contract, yet where the alteration amounts to a real and substantive alteration of plan, and where the increased expense amounts to sums like those which have been set forth in the question lately put to you, do you not think, as a principle of justice and right, that parties should not be involved in these large responsibilities without some communication being first made to them?

I think it is a matter of very great regret that the estimates should fall short; but everything that can be said on that point only comes to this at last. It is a matter of very great regret that an insufficient estimate was submitted to and approved by the proprietors.

506. Passing by the question, even of expediency and of equitable claim, will you have the goodness to explain to us by what Parliamentary and statuable authority you conceive that the Board of Works were justified in making these large changes, and in so greatly augmenting the expense without reference to the parties?

The 53d section of the Act is very explicit on that point.

507. Will you have the goodness to refer to it, not reading the whole of the section, but referring to the special part which in your judgment confers that authority; will you give us the word or the sentence upon which you rely?

"Be it enacted, that it shall be lawful for the said Commissioners to contract with or employ such contractors, surveyors, agents, and workmen as they shall think fit, and to make and execute all such works as shall be described in the maps, plans, and sections hereinbefore mentioned, or such deviations therefrom, or such other works as they shall deem necessary, for effecting all or any of the purposes of this Act, and for such purposes to enter into and upon any land whatsoever."

508. You are supposed, being a public servant, to be cognisant of the system on which public works are carried on; do you think that in any other transactions a construction so wide as that which you have described could be given to the words, "deviations or other works;" must it not be other works and deviations within the spirit and import of the works which have been already approved of, and have been submitted to the proprietors?

Those works were approved of for a specific and distinct object, and I think therefore that all deviations and all additions which are necessary to accomplish that object, are the deviations and the additions which are contemplated by

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the words of this Act, this Act being an Act for the drainage of lands in Ireland.

509. Then, supposing that, for the purpose of effecting that object, a totally opposite scheme from the one contemplated had been found necessary; and supposing that the expense had been tenfold greater than that which had been already taken, assuming hypothetically an extreme case, do you think the words would have admitted of the carying on those works, and encumbering all the landed proprietors with an expense tenfold greater than they ever covenanted in their judgment to pay?

I think that in law there can be no doubt of it; but if such a case had arisen I do not think the Board would ever have gone that length, or made so total a change.

510. Supposing a question of drainage under the Act, and which drainage was the main distinct object, but incidental to which, in carrying on an outfall, you gave a navigation which would be of use to the proprietors; if the assents were so given, should you feel yourself, under the terms of the Act, at liberty to substitute for that plan another, which might be effectual in the way of draining, but would entirely exclude the benefit of the proposed navigation?

No, because that is one of the purposes contemplated by the original plan; my feeling is, that we are bound, as far as we can, to carry out the purposes, whether of drainage or navigation, contemplated by the original project, although we are not bound as to the means.

511. The case put is purely that of a drainage work, but in which as an incident by the original plan, an improved navigation is included: the purposes of the drainage by the hypothesis would be equally answered by another plan, excluding the navigation, but it might be very much less profitable to the parties who had given their assent; you are therefore asked whether, under those circumstances, the object being that of drainage, you would feel yourself at liberty to carry on the work, excluding the navigation?

If the navigation was an incidental advantage, not contemplated by the project, it would not come within the specific objects of the plan which I have spoken of. What I say on that subject is to be also taken with this understanding, that when works of navigation are combined with drainage as an object, the law would be wholly different, and we should not be justified in altering it at all. When navigation is combined with drainage, half the expense of the navigation is made a free grant by the Government, and we should be therefore doubly compelled to carry it out.

512. When you mention the specific object of works undertaken by these Acts, do you not mean the application of a certain amount of capital to a certain improvement, not the carrying out of a certain improvement, without any reference whatever to the capital necessarily employed?

I think the object to be attained is the drainage of the district in question which is reported upon.

513. Without any reference to the capital?

I would not go so far as to say without any reference, but for an expense of which an estimate has been made, according to the best information which the engineer entrusted with the estimate possessed at that time.

514. In a case where the estimate is a little under 1,000 *l.* surely it might be very rational to incur that expense in draining a small quantity of land, when if it came to somewhat exceed 2,000 *l.* it would be decidedly irrational. In such a case as that, would not the value of the specific object be determined entirely by the amount of expenditure?

The law is exact on that point; and I think the whole question is whether the law is an expedient or wise law.

515. The law giving power, is it wise, or practically just in the Board to exercise the power in such a manner. We will refer for illustration to No. 108 in the paper before you, the Boley case, where the estimate is 995 *l.*, and the expenditure is 2,220 *l.*; would it not have been fair to the proprietors who gave their assent to an estimate of 995 *l.*, as soon as it was seen that that would not half complete the object, to stop before a greater charge was incurred upon their

their property, and ask them whether they were inclined to go on with it at the cost which was evidently necessary to complete the object?

I have said that in all such cases I think it would be very desirable to consult the proprietors, and to endeavour to satisfy them of the necessity for the increased expenditure; but I think that individual case, and any other individual cases, indeed every one of them would be most advantageously met upon their own distinct ground, because it is very possible that the case put by your Lordship may be worth the 2,000 *l.* although it was originally intended to be done for 1,000 *l.*

516. Is the same surveyor continued on the fresh estimate who made the original one?

I think not in many cases, because, owing to the successive stoppages of the works and their successive resumptions, the men who were originally employed, have been, perhaps, retained or discharged, and when the works have been taken up again, they have been by new hands.

517. And the same parties were not employed elsewhere; was a man who made an erroneous estimate upon certain works at once dismissed by the Board when he made an incompetent estimate?

Unless he was able to show good reason why he had been deceived, no doubt he would not be employed again.

518. Are you aware of any civil engineer or surveyor who was discharged from incorrectness of estimate by the Board of Works?

The Drainage Commissioner could answer that question.

519. You state that the Act obliges you to finish the drainage of a particular district when it has been once undertaken, that that is the object of the Act; how far do you think the words "deviations" and "other works" might be carried?

The Act places no limit, and I am unable therefore to define any; really it is a question wholly of discretion.

520. Then, in point of fact, a number of proprietors may assent to the drainage of 5,000 acres at a given sum, and upon that assent the Board has the discretion to drain 20,000 acres, at ten times the original sum, and without further reference to the proprietors; is that the understanding?

The law gives very extensive powers, but so extreme a case could never arise in practice.

521. If the Commissioner of Drainage has in any case so far exceeded the original intention of the proprietors, he has, in your judgment, been guilty of indiscretion?

I think so serious a question should be answered by the Commissioner himself, on some specific case; I should think it injudicious to incur so largely increased an expenditure.

522. You were understood to say, in speaking of the control which the Treasury exercised over your Board, that they had the appointment of all officers, from the Commissioners downwards; do the Treasury practically interfere in any of the appointments of the officers who are the executive officers of these works?

Not directly, but their sanction is necessary to the appointments recommended by us; it is in their power to name anybody they please, but it has never been their practice to interfere with us in any professional appointment. The Treasury have never exercised what is commonly called patronage with regard to these works at all. They have behaved most liberally, and confirmed many appointments we stated to be necessary.

523. In point of fact the engineers and surveyors, and the head men, locally employed in the superintendence of the works, were nominated by Mr. Mulvany, were they not?

I presume they were; that they were recommended by the Commissioner in charge of the works; in like manner, as the Treasury entrust to the Chairman the nomination of professional people, so he naturally feels in each department through the Commissioner who is entrusted with that department, and if he did not, he would deprive him of the responsibility.

 524. Had

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524. Had Mr. Mulvany unlimited power to appoint executive officers under him?

No, it was necessary that he should recommend them to the Chairman. All appointments are made by the Chairman, but he has to apply for the approval of the Treasury; the course, therefore, in any appointment, is that the Commissioner in charge represents to the Chairman that he requires such and such assistance for such and such works, and he proposes the appointment of so and so; then the Chairman transmits the application to the Treasury with his recommendation, and the Treasury sanction it.

525. But the Chairman takes Mr. Mulvaney's recommendation as a matter of course?

Not as a matter of course, he sometimes negatives it; he says, I do not think you want such and such a person, and I shall not give him to you.

526. But that negative is with reference to the appointment, without reference to the individual nominated?

Yes, I think the individual is generally approved who is proposed by the Commissioner, because he is responsible for that person's labour, and he is the party, therefore, who ought to recommend him.

527. Did the Treasury at a late period exercise a more direct control in any degree than they did in the beginning over the drainage operations?

After the public money began to form a very large part of the funds, the Treasury began to assume a very vigorous superintendence, and in the spring of 1849, the greater part of the works being about to re-open on new funds being supplied, the Treasury called for a return of the state of progress of all the works, the expenditure which had taken place upon them, and the sums then estimated to complete them. In resuming the works, the Treasury insisted that a statement should be laid before them of the amount of staff that would be required for each work, and they distinctly sanctioned those persons; and instructions were given to the accountant that no other persons should be paid except those so sanctioned. Appointment books were opened and the appointments approved by the Treasury on Schedules, and signed individually by the Chairman, were deposited in the hands of the accountant, with strict orders from the Board that no one should be paid who was not on those lists. The control of the Treasury then became very direct, and has ever since been exercised very strictly.

528. There is no statement here of the amount paid in wages to the superintendents, is there any such statement in existence; there is the amount to each per diem and per annum, but there is no total, showing the per centage on the expenditure, we have an expenditure of 1,200,000 *l.*?

A return has been prepared which will be laid before the Committee by the Drainage Commissioners, showing the amount of per centage proportion to the whole expenditure; that return has been very carefully prepared.

529. We see in the papers, that the salaries of many of these surveyors, and engineers, who appear to have been paid monthly, vary very much from month to month. Can you inform us whether it was by a per centage, or upon what principle the salary was paid?

Some of the drainage engineers have charge of two or more works, and a portion of their salary is charged to each work; if either of the works ceases, or is suspended, that portion of his salary ceases, so that it may vary from time to time. On the average, I think, the salary of the engineer is about one per cent. on the expenditure.

530. Without calling upon you to give any opinion about a brother Commissioner, we may ask you two or three questions upon a matter of principle. The Commissioners state as their justification for carrying on the works without appealing to the proprietors again, "From that period," that is from the period that the assents have been given, "the Commissioners become, as it were, the trustees of the interest in the improvement, not only of both classes of proprietors, but of the inheritance in the lands, and the interests of mortgagees, annuitants, and others having any claims thereon. Trustees for the lenders (whether private individuals or the Government) of money for the execution of the

the works; judges of the compensation to be paid to parties injured; arbitrators between the proprietors themselves, and between their conflicting interests, as owners of lands to be drained, and the interests of owners of mills, or other obstacles to the drainage, and finally called on to decide, in an engineering point of view, upon the measures necessary for the complete drainage of the lands. These powers and responsible duties are respectively vested in and imposed on the Commissioners as public officers for the sole benefit of the estates to be drained." Is it likely that the interests of the mortgagees would be in safer keeping with a Board, who had no direct personal interest, than they would be with the proprietors, who have the strongest personal interest?

It seems to me that they are opposed; the proprietor's interest would be to spend as little as possible.

531. Would not that be also the interest of the mortgagee?

It would be if the result were the same, if the work were equally successful with a small or a large expenditure; but it is the interest of the mortgagee that the improvement should be made absolutely complete, otherwise his own security is damaged.

532. Do you think that the Legislature has laid down any principle opposed to that principle which you have laid down, in limiting the expenditure in certain cases to 3 *l.* an acre, and giving the proprietors an absolute power to stop the work?

No, I do not think that bears at all upon the question. The limitation to 3 *l.* an acre is contained in the Acts which we call Summary Proceedings Acts, which by their preamble are stated to be relief measures. The origin of those summary measures was the desire of the landed proprietors of Ireland to make an immense amount of labour that was then disposable, available for the improvement of the country, and they very creditably put themselves in the breach; they undertook a great amount of drainages, thereby making their property liable to very heavy charges, for the sake of employing the people; and it was pressed upon the Government that Acts of this sort should be brought in with a view of removing the difficulties which had been experienced in bring into operation the original Drainage Acts. That feeling was embodied very distinctly, I think, in certain resolutions of the Royal Agricultural Society, as well as other bodies, and expressed in a memorial which was presented by a deputation to Sir Thomas Fremantle, if I recollect rightly, and that memorial was by him referred to the Commissioners of Drainage at that time. It was in the year 1845, the latter end of the year, and the Drainage Commissioners themselves in their report, while they paid every tribute to the devotedness of the gentry who were so anxious to employ the poor, said that they thought, if their views were entirely carried out, and the drainages were made compulsory —for I believe one of the proposals was that the Government should themselves undertake any drainage they thought proper, and afterwards charge the proprietors with it—this would be, if I remember the expression rightly, to "degrade" the proprietors by undertaking the drainage of their lands whether they wished it or not. The Commissioners did not therefore concur in that proposition, but recommended that facilities should be given for the preliminary proceedings by the advance of public money for that purpose, instead of the money being provided by the proprietors themselves as originally required; that those preliminary difficulties should be removed in that manner, and that the expenditure so undertaken for the purposes of employing the people during famine should be kept under a limitation, because the famine was not to be expected to last beyond a certain time, and it was with that view that the Drainage Commissioners themselves proposed that these summary powers which the proprietors were anxious to invest them with, should be limited to 3 *l.* an acre, assuming and hoping that the necessity would cease with the 3 *l.* an acre. A proof that it was not a caution imposed by the Legislature, I think, may be sufficiently inferred from its being temporary. That limitation applies only to the works undertaken under the Summary Proceedings, and when those Acts expired, that limitation expired, and does not exist in any works which may now be undertaken.

533. But has any Act been passed since without a provision of that sort being embodied in it; has any Act been passed at all?

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There has been no subsequent Act. An Act was prepared to consolidate all the Drainage Acts into one code, which would, in some respects, have amended the existing Acts, I believe, but it did not contain that limitation; that Act never was introduced, and there practically has been no additional legislation; the original permanent Acts stand in all respects.

534. Was not that provision intended as a safeguard for the proprietors and mortgagees, who all had an interest in the land?

I think it was meant to be the degree to which the Government were disposed to consent to the representations of the landed proprietors of that day; the Government did not choose to assume the responsibility of entering upon lands, and, from the very outset, draining them whether the proprietors liked it or not, but they consented, in order to facilitate the preliminary proceedings, and to let the expenditure go as far as 3 *l.* an acre, with the view that after that a second assent should be obtained, and the work proceed as a deliberate measure.

535. Keeping to principle, if it would have been dangerous to the interests of the mortgagees, as the Commissioners assume, to have had any interference on the part of the proprietors, would it not have been still more dangerous for the Legislature to have empowered the proprietors to stop the works altogether at a particular period?

The summary Acts were so complicated with the relief measures that I think there is considerable danger in applying the analogies drawn from one to the practice of the other.

536. Taking the analogy of England in works carried on under a private Act, in whose keeping are the interests of the mortgagees and annuitants, and so forth; are they in the keeping of the Board of Works, or in the keeping of a certain number of landed proprietors?

I am not familiar with any of the local Acts for English drainage. I have never seen any of them worked, but I doubt whether any of those works are similar to ours. I understand, from what your Lordship describes, that the control must be in a committee of the proprietors themselves, but then I do not know how far the charges given by those local Acts override other charges, or interfere with other charges. It is very likely they only come in their order of precedency, and if so, there is no need of any such protection; even the original Drainage Acts in Ireland do not make the drainage charge a charge in priority on all the profits of the land; they only make it a charge in priority on the improved value; it was a subsequent Act of the 8th & 9th of the Queen, I think, which made it a priority charge on the whole value of the lands; that was a very important change, and has been very much overlooked.

537. Let us suppose a case in which assents have been given and works have been executed, that application is made for second assents, and those assents are refused, the work is necessarily suspended under those circumstances?

Yes.

538. Is there not continued, as against those works, an accumulating charge for the interest upon the money which has been already advanced, although the work has been suspended from the want of second assents?

There is.

539. Is there any limitation as to the accumulation of that interest?

In strictness, if the second assents are not given, an immediate award ought to be made, and it is only under the impression that the proprietors will, when they thoroughly consider the matter, give their second assent that the Board is justified in withholding the award or incurring any expense upon the matter.

540. Supposing a case in which the expenditure under the first series of assents has produced no increased value of any kind, how is that to be recovered?

In the case your Lordship puts, I think there would be very great difficulty, but I hardly think it can arise; it is scarcely possible but that some improvement will be effected, and in that case the person whose property is improved is the person that will most suffer, because the expense must be assessed upon the improved property. I have heard cases stated where people who have derived large benefit in the early part of the work have been exceedingly dis-

inclined

inclined to any further expenditure, because they could execute all the rest themselves at a less cost.

541. Practically speaking, can you not imagine from your acquaintance with Ireland that many cases may arise in which parties refuse the second assents, although they might be benefited by the operation of the works, from an unwillingness to incur large pecuniary responsibilities than in the altered state of the times it is convenient or prudent in them to undertake?

I have no doubt such is the case; I have met with many instances of it, and I think the great misfortune of these works is that they were begun at a time when landed property was at a much higher value than it is at present; that they were immediately met by a very great calamity; that public money, which at first was advanced in aid of that calamity, was afterwards withdrawn, from the necessities of the money market, and that when the works were resumed, great injuries had occurred to them, and from other causes much greater expenditure was incurred than the first estimate, and this now comes to be paid at a time when the original property has sunk considerably in value.

542. Do not the cases of disproportionate expenditure to the work done, and consequently the necessity of a larger supplementary grant, show themselves more especially where these works were undertaken in a period of great distress, and where they were really and *bonâ fide* undertaken specially with a view to the employment of the labouring classes?

No doubt; and I think it is very likely that the excess will be found greatest, and greater and greater, precisely in proportion as the relief element entered into the work.

543. We presume that the relief element made it inevitable in many instances that these works should be undertaken at an inconvenient, and therefore at a more expensive period of the year?

Decidedly; many of them were with that view and from that cause undertaken in the winter, and carried on in parts of the river-course which were not the most advantageous parts. Instead, for example, of opening the lower part of the stream, which of course is the natural process, it became necessary to begin at the top and to throw the water on the lands below, thereby absolutely injuring them; yet that was the consequence of their being relief measures. It is but one of the many cases which are familiar to your Lordship in another Committee, where the attempt to combine useful work with relief was a perpetual source of trouble, and frequently of inevitable failure.

544. Therefore the result of what you have clearly stated will be to throw the greatest amount of difficulty, and the greatest amount of pressure, upon that very class of proprietors who undertook these works, not only from any possible benefit which they might receive, but for the auxiliary purposes of relief that they might confer?

I have not a doubt such is the case; it is the same as with all other relief works, and I believe that the great difficulties which are now under inquiry would not have arisen under ordinary circumstances. When I look, for instance, to a few figures which I have here, as to what has been done, and what is shown on that map, I think the drainages are the most extraordinary series of works that has been ever undertaken. Only 122 works have been carried on out of 500 which were applied for. They involve no less than 3,100 proprietors. On the whole, nearly 1,800 miles of river-course will have been opened, when the works now in progress are completed. They drain catchment basins to the extent of between seven and eight millions of acres, or 12,000 square miles, more than one-third of the surface of Ireland. Much additional mill-power has also been created; the fisheries will probably be improved; the opening of Lough Mask to the sea will admit salmon to its waters; the health and climate of many districts have already been improved. This is an operation without parallel in Europe, effected for the most part in ten years, and mainly by the energy of one individual. The average cost will be only 800 *l.* a mile; but it is to be remembered that this cost would have been considerably greater under Local Acts, for the law costs even of procuring such Acts would have been scarcely under 500 *l.* each; whereas on these works there is no such cost, the Acts having been Government Acts; the law costs, even during the progress of the works, such as juries, suits, arbitrations, registry, and expenses

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of that kind, have on the whole 122 works scarcely exceeded 1,000 *l.*, that sum being only for money paid by the solicitor out of pocket, because the direct legal work of all kinds has been done by the solicitor of the Board of Works, and his clerks, for their salary without extra charge. In the same manner the whole Dublin establishment of Commissioner, secretary, accountant, clerks, draughtsmen, and computers, have been paid by the Government, and not charged to the works.

545. The possible advantages to be derived from that outlay, and that extent of work, do not represent the amount of per-centage profit, which is derived from the works in their present unfinished state?

It assumes the works to be carried to completion. Then you will have accomplished the great effects which are there shown over one-third of the surface of Ireland, at the expense to the Irish proprietors themselves of something like two millions of money; 2,190,000 *l.* strictly; say 2,200,000 *l.* will be the total cost of all the works when completed.

546. How much is wanted to make the amount up?

We have all the money provided. I think there are about 400,000 *l.* or 500,000 *l.* unexpended. It is to be repaid; the money is advanced by the Government, or raised by debenture.

547. But the means of levying it upon the proprietors are not provided, except in those cases where the second assents have been given?

The law provides for that case, but I am assuming that the works are carried to completion, and the second assents given, and then I think it will present to Europe the most extraordinary work of the kind ever done by private parties, and at a cheap cost. If 800 *l.* a mile excavates these rivers, and if you find that the cheapest railway that has been executed in Ireland, the Galway line, costs from 3,000 *l.* to 4,000 *l.* a mile for earthworks alone, in dry land, cutting out a hill, and filling up a valley; certainly the result cannot be otherwise than that on the whole these drainages have been cheap beyond all measure.

548. Do those estimates to which you have referred include the additional cost which, under the drainage laws, is thrown upon the grand juries for the making and repairing of bridges, and collateral and consequential works?

Yes; the whole of that is included in the sum I have named, and all the compensations, and all expenses of all kinds.

549. Are these arterial works themselves drainages of the several lands, or only outfalls, which facilitate the drainages of the different subdivisions of land?

They are intended as outfalls, but your Lordships will easily see that, in many cases, they drain the lands themselves. In the case of bogs or swamps through which they pass, there are distinctly and decidedly subsidences which, in the bogs through which arterial drains have been cut, is a feature of extreme interest.

550. Have you instances of great improvement which you can cite?

The Drainage Commissioner, who has inspected them, will be able to do so much better than I can. I have heard many stated.

551. Can you give us any information with respect to the consequential improvement that the arterial drainage has enabled proprietors to effect, either out of their own resources or under the Land Improvement Act, in the internal or thorough draining of the land?

No, I am not able myself to give any particular case. Mr. Griffith, who has charge of the land improvement, can state several, but there can be no doubt that in many cases the Land Improvement Act could not have worked so satisfactorily unless the arterial drainage had been opened; and one cause of the excess of the estimates and the alterations which have been made has been the desire to render deep thorough drainage practicable. Perhaps an original project was made with the view of bringing the water within the new river bed, so as what we call to lip its banks, and subsequently it has been cut so much deeper as to draw down the water in ordinary times, perhaps to three or four feet under the surface, thereby allowing a thorough drainage to take place. You have

have in Ireland, a series of great drainage measures. You have first the large artery of the Shannon opened partly by Government, partly by the counties on its banks. You have then the arterial drainages opened at the cost of the proprietors by the Drainage Commissioners and the Land Improvement Act, by which every proprietor, by his own steward and servants, executes the drainage of his own fields.

552. The whole of these improvements which you have spoken of and described, are based upon private effort and private resources, only aided by a Government advance and Government superintendence?

Just so; and I think it is a very strong point.

553. Do these facts consist, with any supposition, that there has been an indisposition on the part of the Irish proprietors to avail themselves, as far as they possibly could, of their own resources, both in developing the productive power of the country and in meeting the distress with which Ireland has been of late afflicted?

On the contrary, the movement that I described on the part of the Irish proprietors to urge forward these very arterial drainages is the best proof of their desire to make useful the immense amount of labour that was then disposable, at their own cost, because these were measures wholly independent of the Relief Acts for Labour-rate. As regards the executive, indeed, it is very unfortunate that the Government did so far concede to their wishes as to make the arterial drainage in any way available for relief, and we are now suffering the penalty of it.

554. Had not the application of the arterial drainage a good effect in some cases, more especially in the county of Kildare?

I do not remember any particular instance in which land improvement was facilitated by the arterial drainage, except in the neighbourhood of the Blackwater, in the county of Kildare. There are also indeed some cases in the West mentioned in the Correspondence.

555. Were not there instances in the county of Kildare, in particular baronies, in which, up to a late period of the distress, the relief was practically given through the means of the improvement of the arterial drainage absorbing in that occupation the unoccupied labour?

Yes; and there are letters in the Correspondence which show the particulars. There is a very remarkable letter from Mr. More O'Ferrall on that subject, and a Treasury Minute upon it; in fact, that letter had a very great bearing upon arterial drainage, for it altered the rate of interest; the application, if I remember, was to expend money provided by what we call the Million Act, under the powers of the Drainage Act; the Treasury did not and could not assent to that, because the Appropriation Act prevented them, but they brought in the Land Improvement Act the next year.

556. It was discovered that there was an unfortunate mistake in drawing the Million Act, that it was not available for settled property, and as a consequence, its purposes of improvement were suspended until Parliament should amend it?

There were several reasons, I believe, why it did not act; the laws of settlement of property and the peculiar complication of the tenures in Ireland rendered it impossible that people could avail themselves of it so freely as they did in England and in Scotland; moreover, it required that the money should be expended first, in England and people, though compelled to do the same, for that law was the same in both countries, found great facility, I believe, in borrowing from bankers, and practically a good deal of the money so expended under that Act, I have been always told, in England and Scotland was borrowed money, but not advanced by the Government.

557. The only difference in that respect was, that in Ireland by the amended Act the first instalment was advanced, no second instalment being made until the first had been duly accounted for and reported upon, whereas in Great Britain the parties had themselves to advance their first instalment, and obtain the repayment of it only after the expenditure?

That is the essential difference.

558. But the main practical cause of the difficulty was the opinion which

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had been given by the Crown officers in Ireland, that no money could be borrowed upon lands in settlement, on the part of the tenant for life?

Yes, such was stated to have been the case.

559. You mentioned that great injury had arisen in the progress of the works, from their suspension from want of funds?

Yes.

560. It appears from the reports, that for a very considerable period there was an impossibility of borrowing money from private indiyiduals by debenture, which caused these suspensions?

I do not know that there was any great difficulty in borrowing money, which could not very easily be accounted for from the mere state of the money market; the funds were very low; they had fallen down to 70 or 75. People could not sell their money out of the funds to put it into the drainages. During the famine of course nobody had money to lend. That was followed by as great a panic and as much distress in England as in Ireland. It was at the close of the railway mania, when half the country was bankrupt. It is not at all to be wondered at that there was no great supply of money in the market at that time; it was not peculiar to Ireland; but there is no difficulty in borrowing money now; we have had frequently to refuse loans. One difficulty, however arises, viz. that we can only borrow money for specific works, which, no doubt, was a restriction very wisely and well intended; but it works ill in this way, that people lend money for a particular work, which they know or think will be a paying and good security, and we are induced to take all the money we are likely to want for that work, then and there, at once; whereas we are not able to expend it, it may be, for some time to come, and we are obliged to charge the work with interest; when on another work we have no money offered to us at all.

561. Cannot you take money with the power of applying it upon such works as the Board thinks fit?

No, we have no power to apply it but as the lender thinks proper, and the debenture is issued as a debenture upon that work.

562. You have no security to offer, have you, but the security of the specific work to be carried out?

None; it has been proposed by the Special Audit Commissioners, who examined into the subject, that a general fund should be raised instead, and there is no doubt it would be a very great advantage.

563. You would borrow very much more cheaply?

No doubt we should, and interest would be saved to the several works; but when we offer 5 per cent. we command the money market at all ordinary times, and can get money to any extent.

564. Still, for a long period, though you offered 5 per cent., money was not forthcoming?

It was just at the time of the total want of money in the country; we could not borrow money upon any terms then. In justice to Mr. Mulvany, it is only fair to state, when one looks at these works, that they present the boldest and most vigorous scheme of drainage, and however irregularly they may have been carried out, from difficulties as to funds, yet they exhibit an amount of engineering talent, of boldness of conception, and vigour of execution, which is one of the most extraordinary things on record.

565. Had the proprietors no option as to whether the money should be raised at 5 per cent. or at 3 per cent.?

That is the maximum fixed by the Act of Parliament.

566. Five per cent. is the maximum?

Yes, the Treasury may make it lower; the Treasury did at one time instruct us to borrow money at a lower interest, at a time when money was abundant. We did advertise for loans at 4 per cent., and I believe we even received a few; at present we are offering 4½.

567. Had the proprietors any right of complaint as to the rate of interest given;

given; could they come and complain to the Board that too much interest had been given?

I think it would have been very open to them, if large sums of money had been taken at too high an interest, to represent to the Treasury that the interest ought to be reduced, but the Treasury watch so closely, that they are always ready to keep the interest down to the lowest amount.

568. In the case of debentures?

Yes; but at that time we were very reluctant to reduce the interest, feeling that if we played with the market by lowering and raising the interest, we should shake the confidence of the public in the debentures, and that it was better to keep it at 5 per cent., even though we might get a small sum at a lower rate, and then have to raise it again.

569. Are the proprietors aware of the amount of interest?

Yes.

570. Is it a matter made publicly known?

Yes, it is advertised in the papers.

571. Can you state the amount of money that has been borrowed on debenture?

A very small proportion, not more than 200,000 *l.*, I think; about one-tenth.

572. Did you ever hear that the principal difficulty in borrowing money upon debenture, was that clause in the Act as to the protection of reversionary interests, in fact, a doubt as to the security?

There is a case submitted to the Attorney-general on the question of security, which will be found in the early part of the Drainage volume.

573. It is the 9th Vict. c. 4, s. 1; the proviso, is "Provided always, that it shall be lawful for the said Commissioners, and they are hereby required, in making their final award, after the execution of any of the works by the said Acts or this Act authorised, to specify and state therein that the repayments of all sums expended in or about any such works as aforesaid, shall be made either by one payment or by instalments, half-yearly or otherwise, so that in case of one payment the amount of the same, or in the case of instalments, the amount of each instalment, with interest in either case, shall not exceed the amount of the estimated increase in the value of the land to be drained or improved." On reading that clause, if the increase arising from the expenditure of money was less than the interest of the capital, what would become of the capital; if the annual sum imposed upon the land was less than the interest of the money expended, out of what fund could the capital be ever paid?

It would be our duty to take the orders of the Treasury on the subject, and meet the case by spreading the repayment over a larger number of years.

574. You would make a consolidated annuity of it?

I think that would be a very good plan; but my answer is, that it would be our duty to take the orders of the Treasury.

575. Are you acquainted with any fund from which the amount could be paid?

The case, I think, would not arise.

576. The proprietors state, in the case of the Brusna Drainage, that the amount of the expenses will about equal the fee-simple of the land; what becomes of the loan in that case, supposing that it be true?

I do not think that will prove to be the case.

577. You are authorised by the Act of Parliament to spend 3*l.* an acre upon 15,687 acres. You have spent 53,726 *l.*, and that is more than 3 *l.* an acre; how is the surplus to be paid?

That must be considered when the award is made; the award is not yet made.

578. Then you are acquainted with no fund from which it can be paid?

I really do not know how the powers of the Act would be construed in such a case; but I think it will be found in the Brusna, that not more than 3 *l.* an acre have been expended on the works. The excess is caused by accumulating interest.

 579. But

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579. But you of your own knowledge know of no fund?
I do not see any fund at this moment. It requires consideration; and I do not think such a case has arisen.

580. The committee of these landed proprietors say, "The average letting value of arable land in the district is 1 *l.* the Irish acre, or 12 *s.* 3 *d.* per statute acre, which at 12 years' purchase," which appears to be what land has been selling for just there, "is 7 *l.* 7 *s.* If the cost of the work should be 5 *l.* per statute acre (the present estimate is 4 *l.* 4 *s.*), when that is apportioned it evidently, in many cases, will exceed the fee." That is their statement. The Board's answer is, that they do not enter into any calculation of that sort; but they say that in numerous cases the improved crops of the lands drained have in two or three years repaid the whole cost; that is the only answer which they give to it?
That may prove to be the case.

581. Suppose a work undertaken that ought never to have been undertaken, a work that will not pay, and suppose that there is a return of only one or two per cent., is not the loan gone in that case?
I really do not know how the law would deal with that case; it is a legal question; but I do not think such a case could arise.

582. Have you ever heard that capitalists apprehended that that difficulty would apply to a great portion of the Irish Drainages?
I have heard that opinion stated in regard to some works.

583. That a large portion of the Irish Drainages would not repay?
No; I have not heard it stated of a large portion, but I have heard it said of some; I, however, think it is a premature opinion. On the other side, I have heard very distinct statements; and I believe proofs will be produced, of cases in which the drainages have been highly remunerative, in which they have already within two or three years, by the increased rents, paid more than the total sum to be charged upon them, and in some that this improvement has been realised even before the award was made.

584. In this Correspondence, and very generally, the proprietors have pressed very strongly to have the works executed as they are in England, by contract; have you ever considered the expediency of that with regard to drainage works; you have stated your own experience as to harbour works carried on under your own superintendence; have you ever considered that proposition as to drainage works in general?
I think it is extremely desirable, as a general principle, that all works should be executed by contract; but the more uncertain the work is the greater difficulty there is in getting contractors for it; and in reference to drainages, they labour under peculiar difficulties, not only because they are the most uncertain of all works, and the most liable to contingencies and risks, beyond the control of the engineer, but also because they are quite new in their origin in Ireland. We have no engineers that I am aware of conversant with works of that nature except those who have been trained under the Drainage Commissioners. In that respect it is analogous to the great work upon which I formerly was employed, namely the Ordnance Survey. We had to begin by training our own surveyors; and the early cost was much above the average. I think that the difficulty in getting contractors will be diminished; that it is far more feasible now than it was a few years ago, and that a few years hence, if the works continue, it will be practicable; but whether it is cheaper is another question, because they have to add a large sum for risk, and a large sum for profit.

585. The proprietors state, "The proprietors are therefore further anxious that the works should be executed by contract, as is the practice in England and elsewhere. There are many objections to the system of the Board of Works, with its enormous patronage, and its liability to enormous abuses; and there are many very strong reasons in favour of the contract system, but they are perfectly obvious, and it is unnecessary to trouble your Lordships with them. The only reason against the contract system which the Board seems to have relied upon in their Report to Parliament is, that in the case of drainage works there is a liability to accidents, and that a contractor would add enough to his tender to cover himself from all possible loss by accident, which sum, in the

the event of their being no accident, would be so much added to the contractor's profit; while, if the work was executed on the Board's system, where there was no accident, the same amount would go to the proprietors. This reasoning however appears to be perfectly fallacious, and at variance with true commercial principles, for competition would prevent contractors from obtaining more than a fair equivalent for the risk; and in practice the vigilance of the contractor would reduce the chance of accident almost to nothing." That is the statement on the part of the proprietors?

They state that it is "at variance with true commercial principles, for competition would prevent contractors from obtaining more than a fair equivalent for the risk." It would prevent them from obtaining more than a fair equivalent, but we maintain that that fair equivalent must be a large sum to be added. I do not think, therefore, that they are correct in stating that it is fallacious. But there is no real difference between us. We admit that competition would keep the contractor down, but we say that a fair compensation for risk is a very large sum under any circumstances. Then they state, that "the vigilance of the contractor would reduce the chance of accident almost to nothing." Now the chances of accident in waterworks arise from causes beyond the control of the contractor or the engineer either; they arise, for example, from floods. Within the months of January and February of this year there has been, in the western districts of Ireland, a fall of 40 inches of rain; a most unheard-of thing: our average fall is 27. These are contingencies and accidents that no vigilance whatever can guard against. But I must not be understood as arguing against contracts. On the contrary, although I have stated the difficulties which have heretofore existed in having these works executed by contract, I have also said that those difficulties are diminished. We have trained people who may become contractors, and the works are becoming better known and better understood, and these contingencies will fall more and more within the reach of calculation. As a proof of it, we are at present likely to undertake a work by contract, the only drainage work now under discussion. It is the one I have spoken of in the north of Ireland, the Quoile drainage, in which we have advertised for contractors. Our estimate for it was 27,000*l.*, I think, and the lowest tender was 37,000 *l.*; one was 67,000 *l.*, I think; so much did they vary, and so very much were they higher than the sum at which we expected to be able to execute the work.

586. Where there is a very great uncertainty the contractor is obliged to make a large margin?

Yes; which if the risk does not occur is his profit; while if we execute the work ourselves, and the risk does not occur, the money is not expended; the proprietors have the money. Notwithstanding, the Board themselves would be exceedingly glad to execute the works by contract; it would save us a vast amount of labour, and great responsibility.

587. You have many sub-contracts, have not you?

The whole of the works, though not executed by great contractors, are executed by a complete system of petty contracts. Every portion of the river space is divided into lengths, and the sections taken at those several intervals, and the cubic contents calculated. The work to be excavated within those intervals is then let to a gang of men, perhaps a dozen or more, with a gangman at their head; they undertake to execute that work for so much a cubic yard, and they are paid from week to week according to the number of cubic yards which they have taken out, on a very strict system which can be shown to the Committee, the arrangements for which are as perfect as it is possible to make them. A contractor would have to do the same. All that we lose is the intervention of the principal contractor. Now one of the advantages of having a great contractor is that you have his capital; we do not want that, for we pay our men from week to week. It must be recollected also that even when a work is under a contractor, it is still necessary to maintain proper officers to visit and watch the work as it is done from day to day.

588. You have not much material to purchase here?

No, it is nearly all labour.

589. Would it not be very difficult to find in Ireland such contractors?

Yes, I have so stated, the works being new in their nature.

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590. Have not you found in some instances where you have tried it, very great difficulty in enforcing your contracts against them?

I really am not aware, except in buildings, of any case in which we have derived any benefit whatever from contracts; but I can tell the Committee of a great many in which we have been involved in very serious losses by them. The works of the Shannon were all let by contract, and I think only one contractor finished his work; the others all broke down in succession, and the works had to be taken out of their hands and executed by the Board, but we were involved in law suits, and the juries gave decisions against us after all. Within my own recollection, within the last two years, we undertook, by contract, the execution of a floating dock at Limerick, the estimate for which was about 50,000*l*. The contractor was bound by his contract to execute a given portion of the work within a certain time, and to complete it within a certain time. When the time within which it should have been half carried through had expired, he had made little or no progress. We urged him to proceed, but at last he failed entirely, and we were obliged to take the contract out of his hands, though this was a contractor so respectable, as the phrase is, that his security was Mr. Dargon, the great railway contractor in Ireland. You could not possibly have better security, but so entirely did he fail that we had to take it into our own hands after much loss of time, and are now carrying it on by day-work and petty contract within the sum. We sustained no loss; we compromised, by taking off his hands the small quantity which he had done at a price that we ourselves fixed upon it, so that we did not lose.

591. You might have forced Dargon, in fact, to do it?

It would have been an extremely difficult thing. We have a very wholesome dread of law, for in these matters juries generally find against the Government.

592. Is it not strange that if all these works are executed in England by contract, whether drainage or anything else, there should be such an impracticability of so executing them in Ireland?

I am not aware of works of the same character in England that are executed by contract.

593. Are there any that are not executed by contract?

I do not know of any works of the same class or of the same sort; railway works are quite another matter. If difficulties occur in the execution of works *de novo* by contract, those difficulties are greatly increased in undertaking the completion of a work by contract, already begun and half finished, because you cannot tell what measurements to take; it amounts almost to an impossibility; I think that in some cases, in one that has been mentioned, namely, the Brusna, which is considerably advanced, it will be desirable, in deference to the wishes of the proprietors, to make such detailed surveys and such detailed measurements as shall enable us to advertise for tenders, and endeavour to execute at least a part of the completion of those works by contract. The expense of these surveys and measurements will fall upon the proprietors, but as it is so earnestly their wish I think it is desirable, and we have, in fact, determined to make the attempt. Everything is against it. We have represented that strongly to the proprietors, but they still wish to finish it by contract. I must say in that we show every deference to the feelings of the proprietors, because we are doing what is entirely contrary to our own views in deference to theirs. We think that the expense will be greater, and the execution less satisfactory.

594. Is there not a great quantity of work done in connexion with what is commonly called arterial drainage, that is really *de facto* not arterial drainage, but very common drainage?

It is not easy to define "arterial drainage" very exactly.

595. We take arterial drainage to be the opening out of rivers, and outfalls, and waters; but is there not a very considerable amount of mere opening of ditches, and making drains for bogs connected with the execution of these so-called arterial drainages, works which are not at all of that nature?

I am not aware of any.

596. You are not acquainted with the minute detail of the works?

I am not.

597. The efficiency of that system of task-work, of course, depends upon the efficiency of the local engineer or surveyor?
Yes; and upon the measurers.

598. What security have you that the same kind of abuses do not take place there that took place on the road-work where the same system was carried out?
Because the works are executed deliberately, and under trained people.

599. With respect to what we have just been talking about, there seems to be one additional expense, namely, that in each case there is a new plant, whereas with a contractor he has his own plant?
That is not strictly the case. At the close of every work the plant remaining is, so far as it is wanted, transferred to another work, and practically the drainage got a great quantity of plant very cheap, because the relief plant which was left in enormous excess when those works were prematurely closed, was transferred to the drainage work at a nominal price. Whatever is left at the close of a work is sold, and credited to the work, so far as it is worth selling; it is generally worn out.

600. There is a further difficulty remaining, which is, that in 9 or 10 cases of the largest works the proprietors have refused to assent?
Yes.

601. We presume they have done so from an apprehension that they would involve themselves in unlimited expenditure?
In an indefinite expenditure.

602. Can you suggest anything that would have a tendency to restore confidence to them to induce them to assent?
I really see no means whatever beyond that which I formerly suggested. The more they examine into the works which have been executed and completed, and the more they look to the cost of those works and the results derived from them, the more satisfied they will be that the expenditure has not been excessive, and that the works have not been greater than was really wanted. I think they will still continue to feel it a great grievance that the original estimates were so small. The whole question resolves itself into the Act giving very great power, and the estimates, in the first instance, having been almost all insufficient. Notwithstanding everything we can say, and every shape we can put it in, the snake rests upon the tortoise, but the tortoise rests upon that at last. It is the Act of Parliament, and the Estimates.

603. Do you think that it would tend to satisfy the proprietors, and induce them to assent, if the works were examined by some engineer, who from his position, and so on, would be looked to with confidence?
I think it is probable that it would with many proprietors, but I doubt whether it would have any very material influence upon the body of proprietors who are interested in these works. I think it is very possible that some people of skill and science and judgment, accustomed to see extensive works in England, would place more confidence in such an engineer, than in the drainage engineers, but I doubt whether it would have such an effect upon the community at large. I think the best test is to look at the works which are done, and what they have cost. That proposition does not meet the difficulty, by which the interest is heaped up, and the works become indefinitely injured from suspension.

604. Till the assents are given you cannot complete the works, and till the works are completed you cannot have any cash?
We can award upon an unfinished work, and have actually done so. When, therefore, we wait for a second assent beyond a very short time, we do so from an earnest wish to benefit the proprietors themselves by completing the work; we are competent to award immediately.

605. You apply the screw?
No, it is not for the sake of applying the screw; it is really for their own benefit; we should be awarding upon a work that was less satisfactory than it would

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would be when it was finished, and we should be charging the parties who were benefited unduly for the benefit which they had received; whereas if the whole were done, they would pay much less, because other people would pay their share. For instance, here is the case of a drainage carried from the lower outfall, from the sea perhaps up to a certain point, and then the 3 *l.* is gone. Now it is perfectly competent to us at that point to award the whole expenditure upon the lands which have been benefited. But assume this case, that the proprietors above the point to which this drainage has been carried refuse their assent. Have not they then a palpable interest in doing so, for they say, We do not care a straw about you. We now have an outfall within 100 yards of us; we can dig into it ourselves; we will not assent to any more, and you cannot tax us; you have not improved our land. Hypothetical cases have been put in questions to me; the case which I put is more than hypothetical.

606. Looking to this map, a good many of the improvements appear to have been begun at the other end?

That I have explained as having been in the Summary Proceedings, when labour was wanted in a particular district.

607. As a means of relief?

As a means of relief.

608. But you are in this danger in doing your outfall, first, that those who are above may refuse to carry out that which is for the common benefit?

Yes.

609. That is only in the case in which the first estimate has proved inadequate?

No, in the case of the 3 *l.*, *i. e.* under the Summary Acts. Under the ordinary Acts we do not require second assents.

610. But the first undertaking was upon the assumption that the 3*l.* was likely to be sufficient?

No; in several cases, in the case of the Fergus for example, the original estimate was a large sum, and the 3 *l.* is not the whole of that estimate. It was never held out to the proprietors that the whole work would be done for 3 *l.*, it was merely that after 3 *l.* was expended, a more deliberate view should be taken of the subject, because the relief would then be over.

611. Do not you think that a considerable degree of the alarm which stands in the way of the completion of the work would be removed, if upon a deliberate survey of some kind, by some authority or another, either the Board of Works, persons employed by them, or the Government, the parties who are subject to the present liabilities, could feel a reasonable assurance that the work would be executed for the supplemental sum sought?

I have already said that I really do not think it would produce the effect which your Lordships anticipate from it. As far as the Board of Works are concerned they have not the slightest objection to it, but would be exceedingly glad of any measure that could be devised, which would give satisfaction to the public; it would relieve us of an immense amount of responsibility.

612. Considering the mode in which the arterial drainage has been carried on, do you not think that to a certain extent the impression on the part of Irish proprietors is, that it is rather at present the dictum or authority of a single Drainage Commissioner, which they have, or are called upon to rely on, than the deliberate judgment of the Board of Works itself. If that be in any degree the case, a deliberate inquiry by the Board of Works, and a methodized report upon the documents which are now before them, might have some tendency to remove the distrust which is now felt?

In reference to the works which are still unfinished.

613. In reference to the works which are still unfinished, what do you think would be the effect of a Commission issued to inquire into these matters by the Government of persons totally unconnected hitherto with the works; would that, do you think, give satisfaction to the owners of land who are now discontented, and would it be agreeable to the Board of Works and other parties concerned?

I doubt

I doubt its giving the satisfaction that could be wished; it certainly would not be disagreeable to the Board of Works.

614. But it would not give the satisfaction that could be wished to the owners of lands charged or chargeable?

I have thought a great deal on the subject, and I really do not think it would do so; I think that the objection is generally a vague objection, which nothing but expenditure and observation can meet.

615. Surely this is not a vague objection, that an estimate has been enormously surpassed in the execution of a work; that consequently no benefit, but the reverse, is the result to those who have to pay, and that the work might have been executed for even a less sum than the original estimate; that is surely not a vague objection?

No; but I do not know how you are to constitute any Commission which could inquire into all those subjects. The two points that an engineer could report very well upon are, whether the works are more extensive than were necessary to effect the object, and whether they have been unduly expensive in their execution; but when you come to the point of the value of the improved ground to the proprietors, in the first place he can only see the ground as it is, he does not know the ground as it was, and cannot by possibility know it, so that he has but one thing upon which to found his judgment. And then that is a class of people which it is not very easy to get; I do not say that there are no such people, but it is not the function of an ordinary engineer, it is the function of a valuator, and a different class of person altogether, and you can scarcely combine him in the same person as the engineer. Then comes the other question of the discretion with which the work has been carried out. This is a point again on which no engineer could give an opinion, and therefore I would suggest, that if any such person or such commission were sent to Ireland, it should be limited to those two points which I have mentioned, namely, whether the works were greater than were necessary for the object to be attained, whether they had been unduly expensive in their execution, and what would be the cost of completing them; on these points you might get very good information.

616. But if the Commissioners ascertained that the rate charged upon the land for the drainage was fully equal to the present letting value of the land, would not that constitute a strong element in the consideration that, supposing the land to have been of the smallest possible value per acre which can be represented by coin, the expenditure had not been profitable?

That is the present letting value of the land; we must take into account its former letting value, and its value when times are better. The great misfortune of the works is, that they have to be paid for in depreciated currency, *i. e.* from lands which have sunk in value from other causes. The present letting value of the land, though it would be an evidence of the inability of the proprietor to pay, would be no evidence of the expediency of having undertaken the work, or the right of the Government to claim repayment.

617. Although that class of land has fallen in value in Ireland, is there any proof that a great deal of the inferior grass lands of Ireland has practically fallen very largely of late in letting value?

I should expect that the inferior lands have suffered most.

618. Inferior grass lands?

Yes; because you throw now into grass, lands which were before employed for raising other crops; but as cattle increases, all pasture land will rise.

619. That is not the quality of land affected by arterial drainage; the question refers to such lands as low marsh lands?

That is the class of land which we hope to increase in value.

620. That is precisely the class of land of which the increase in value would be the most easily ascertained by a Commission?

Yes, but it must be an increase upon its former value, with reference to its future uses.

621. How do you propose to deal with such cases as you spoke of some time ago,

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ago, in which the lower parts of a valley may have been fully drained by 3 *l.* an acre having been expended. There is no power of carrying out the works further without a fresh assent of the proprietors, and yet if the works are not carried out, the upper proprietors into whose lands the works have not yet been extended will be able to get the benefit of the lower drainage without contributing in any way towards it?

There is no means of dealing with that whatever if their lands are not now improved by our operations.

622. You will have given them a great outfall which they could not otherwise have got?

It may be a legal question where there has been a collateral benefit by the outfall brought more within their reach than before; but we have no direct power to charge them; we have carried no works into their lands; we have conferred no direct benefit upon them. We have put benefit within their reach, and so far have collaterally served them, but it would be a forced construction of the Act to put any charge upon them, I think.

623. Can you lay upon them any part of the original charge of 3 *l.* an acre, even if they were originally assenting parties?

As lawyers say, "as at present advised;" I do not think we could.

624. Their original assent would not commit them?

No, I believe not, because the original assent is an assent to a project for drainage calculated to produce a certain effect, and after the operation is complete the lands are re-valued, and the whole cost of the work is assessed upon each of those several lands, acre by acre, according to the improvement which they have severally received, not according to the original value.

625. Is it an equal assessment upon all, or graduated according to the amount of advantage supposed to be derived?

Graduated according to the supposed improvement.

626. You were asked with respect to the possible benefit or advantages of any inquiry by a Commission into these works with a view to their completion, in addition to the points which you have suggested as being possibly within the range of such an inquiry; do you not think that for the purpose of removing apprehension and facilitating the progress of these incomplete works, it would be a just object for such Commission to consider the supplemental estimate, and how far that supplemental estimate would or would not be adequate for the completion of the works?

Yes; I think that might be embraced within it, certainly.

627. That is the most important part?

That is, perhaps, the most important part in regard to the unfinished works.

628. If you could for a moment forget that you are a Commissioner, and fancy yourself a landed proprietor, taking that return, knowing what has taken place, and seeing the evidence of it there, would you have confidence in the Board of Works?

I cannot put myself in that position.

629. Viewing the construction which has been given to the 53d section of the Drainage Act, do you think it would have been the act of prudent or rational men to pledge their property in the unlimited manner which such a construction of that Act seems to warrant, namely, to an indefinite power of taxation, without limit, or without requiring their consent?

It would have been an act of very great patriotism.

630. We believe you are a native of England?

Yes.

631. Do you think that it would be possible to introduce that principle in this country, or that if such an Act were passed, landed proprietors having a knowledge that that was the real construction of the Act, and that they subjected their property to that undefined taxation, it could come into operation at all?

I hardly think it would.

632. The proprietors very generally say, that these valuations are quite delusive, both the preliminary and the subsequent valuations. Taking this case, to which we have directed attention to-day, merely as an example, namely, the Brusna case, because it has been very much argued on both sides, both by the Board and by the proprietors; it is stated by the proprietors, and there is no doubt of the fact, because it is taken out of the reports, that the improvement is valued in the first instance at $8\frac{5}{6}$ths per cent., the outlay being 47,329*l.* 11*s.* 8*d.*, that is from the first report of 1846; in the revised report of 1851, the improvement is valued at $8\frac{1}{2}$ per cent., with an outlay of 76,000*l.*; and the question the proprietors ask is, how much has land increased in value from 1846 to 1851?

May I inquire, is there an answer given to that?

633. No; is not that fact sufficient to throw considerable doubt upon the accuracy of the statement?

That is a question which the Drainage Commissioner can answer better than I can; I do not feel competent to answer it; it depends on details with which I am not acquainted.

634. These facts are in the correspondence, and the Board have made no answer?

I am not aware why that particular statement is not replied to. The answers have been drawn up since I left Dublin. A great cause of uncertainty in the estimates is the uncertainty as to the amount of rain-fall. The practice, I believe, was, after getting the extent of the catchment basin, to apply to it the average rain-fall of Ireland, and the best that could be observed in regard to that basin, by the discharge under the several bridges; but afterwards, when rain-gauges were put up in the district itself, the amount was found to be very different. You might be applying an average of 27 inches of rain, perhaps, to a district in which it proved afterwards that 40 inches fell.

The Witness is directed to withdraw.

Ordered, That this Committee be adjourned to Friday next, One o'clock.

Die Veneris, 18° *Junii* 1852.

THE EARL OF ROSSE in the Chair.

LIEUT.-GENERAL SIR JOHN FOX BURGOYNE, G.C.B., is called in, and examined as follows:

635. YOU were Chairman of the Board of Works when the Act of the 5th & 6th Victoria, chapter 89, was passed?
I was.

636. Under your auspices the great experiment was tried of introducing this important system of drainage into Ireland?
It was commenced when I presided.

637. Looking at the Reports of the Board of Works, we perceive you proceeded at first with great caution?
With great caution. I was always anxious to do so, because the operations involved a great many difficulties.

638. In the first Report you laid down that it would not be desirable, at least at first, to undertake any work where there was not a probable permanent return of 10 per cent.?
It was our wish to confine it as much as possible to that.

639. In the second Report you laid down the principle pretty fully upon which the estimates were to be made, which were to be laid before the proprietors previously to their being called upon to assent?
I have no doubt of it; I do not remember it.

640. The paragraph is the following: "With respect to estimates, our instructions to the engineers are, to include every item of expenditure likely to arise, and to take especial care that the amount shall be sufficient to complete the works in the plainest, but at the same time most substantial manner, for which they are held responsible, and before we finally sanction any undertaking, we adopt every reasonable precaution to assure ourselves that the works may be executed within the estimates." What meaning did you attach to the words "for which they are held responsible"?
There ought to have been a little explanation of that given; it should have been, to the best of their judgment, because these works generally are very precarious; they depend so much upon great falls of water over large districts of country, that it would have been quite impossible to hold them absolutely responsible for the estimate which they might make; and more particularly in work of that kind, it is rather better, in the first instance, to underdo it than to overdo it, because if you do too much, you never can recover the money back again; but if you make excavations in earth, which are not quite sufficient, you can increase them afterwards, so as to adjust them to the demand. Absolute responsibility would

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would have been quite out of the question certainly; but we made them responsible so far, that if we had found afterwards that they had committed any error in omitting anything which ought to have been included, we should have held them responsible for it.

641. If you had found that, in a variety of instances, the costs subsequently exceeded the estimate two or three times, would you have conceived that that was a case where the engineer incurred heavy responsibility?

It would have been a case certainly for inquiry if it was for precisely the same amount of work and for the same result as had been anticipated from the first; but it might, perhaps, arise from extended districts, or matters that subsequently came into operation, that you were not aware of before. For instance, suppose a drainage is made in the lower part of a district; you naturally would only provide for the work necessary to relieve that portion of the district for which the drainage was intended, and that would lead to a certain amount of excavations. But if afterwards a very extensive district above was drained, you would then have to increase that lower part, and of course the charge would come more heavily, I do not know whether upon the proprietors, but the amount of work would be much greater upon that lower part than was originally contemplated, or necessary, for the first district in itself.

642. That precise case has occurred in the Ardee district, and in several others? Yes.

643. That seems to be one which cannot be dealt with except by legislation?

I do not know exactly who are responsible, whether the lower proprietors, or the upper ones; it is a difficult question.

644. Further you go on to explain more definitely: "Sometimes the very same parties ask for a pledge that the cost of the works shall not exceed the estimates; but this cannot be given, although we both, from consideration of duty, as well as inclination, make every exertion to have the works executed on the most reasonable terms consistent with efficiency, and feel tolerably confident that, except under circumstances of an unusual nature, they will be completed without an exceeding of the estimates; and that although the risk of each operation must be considered as attaching to the parties sought to be benefited, yet there need be little apprehension of its success." Have you looked at any of the returns which show the present state of the works?

I have not.

645. Looking to the state of the works as exhibited in that Return which is now placed in your hand, would you be disposed to think that the principles which you laid down in the second Report had been strictly adhered to or not by the Board in their subsequent operations?

I should be sorry to give an opinion upon that, unless I took a particular case, and had all the circumstances and explanations before me, because I might pass a censure where perhaps it would not be deserved if it was fully explained.

646. You will observe in that Return that in a variety of instances the works exceed the estimates?

In this case of Ardee, for instance, the amount actually expended is double the original estimate; but there is an important point for consideration, namely, that the district was very much increased, and of course the lower drains were required to be very much enlarged.

647. Take another instance?

The Blackwater drainage was done during my time.

648. Looking to the correspondence, the Blackwater drainage appears to have been highly approved of?

Yes; I know that at the commencement it succeeded very well; but we began, as explained in the Report, upon this very cautious system, and particularly as it was very novel, though it promised very great benefits. I was very anxious that

that it should be begun cautiously, on account of the many difficulties, and the many contingencies to which it was liable.

649. The correspondence has been put in evidence which led to the appointment of Mr. Mulvany as the head of that department. We rather infer from that correspondence that the main object at that time was to obtain a gentleman who had some knowledge of engineering, and who was disposed to work at a small salary, inasmuch as the experiment was only just beginning; subsequently the works became very extensive. Should you think that Mr. Mulvany had had sufficient experience of drainage operations to carry on the very large works that arose afterwards, without having had the advantage of English experience, or experience on works of importance?

I had, and have still, a very high idea of Mr. Mulvany's ability. He first commenced as a subordinate engineer, not in the pay of the Commissioners, but, I believe, employed by one of the engineers who was engaged by the Commissioners; and he showed himself so able, and many of his reports were so very good, he was so extremely zealous, and so active, that we engaged him in the service of the Commissioners; that was on the Shannon; and a great deal of the measuring of the Shannon was connected with drainage; indeed almost every thing depended essentially upon the drainage, and he showed himself so able in that particular branch, that that was one of the reasons why we attached him to that line; and I thought that every report which he had made was very valuable, and extremely able. A great many of the books which I now give to my own officers as matters for instruction, are very well drawn up; they were chiefly done by Mr. Mulvany; at least, he laid out the general features of them.

650. It is considered, in Lord St. German's letter on the subject of the appointment, that Mr. Mulvany was mainly instrumental in framing the original Drainage Act of 5 & 6 Vict.?

Yes; he was engaged very much in organizing a great many points connected with the business of the Board of Works, fisheries and drainage.

651. You considered him perfectly competent to the duties that he had to undertake; at least, at the beginning?

I thought so; and have no reason to alter my opinion, as far as I am acquainted.

652. When did you resign?

In 1845.

653. The excess of the estimate in the case of Ardee you have justified upon the ground of the extraordinary circumstances which afterwards took place?

It may be owing to that; that is one reason why it may have occurred.

654. For a similar excess, without that peculiar explanation, you would have held the officer responsible?

Certainly; for any excess I think he is responsible. It is a bad system to confine people too rigidly to estimates, because they get into the habit of over estimating; but wherever there is a great excess of estimate, you have a right to demand explanations, and to be satisfied upon it.

The Witness is directed to withdraw.

W. T. Mulvany, Esq.

18th June 1852.

WILLIAM THOMAS MULVANY, Esquire, is called in, and examined as follows:

655. WHAT is the designation of the office which you hold under the Board of Works?

I am one of the Commissioners of Public Works.

656. You are not called the Commissioner of Drainage?

No. When the Drainage Act was first passed, in 1842, there was a separate Commission created under that Act for drainage. The Board of Public Works were made Commissioners, and a power was given to the Treasury to appoint an additional member or two, and I was appointed at that time Commissioner of Drainage, to be associated with the Commissioners of Public Works. Subsequently, in the year 1846, a Consolidation Act was passed, whereby the Drainage and the Shannon Commissions were broken up, and the Fishery Commission, of which I was made a member in 1845, was also dissolved, and they were all merged in the Board of Public Works, of which I was appointed at that time a member.

657. Then are you the member of the Board of Works charged especially with the drainage department; is that the designation of your office?

With the drainage department, the fisheries, and the business under the Railway Clauses Consolidation Act as regards waterways under railways. These are the chief peculiarities of my department.

658. But there is no particular name by which to designate it?

No; I am a Commissioner of the Board of Works.

659. What public appointment did you first hold in connexion with the Government?

In connexion with the Government I first held an appointment on the Boundary Survey, under Mr. Griffith, in the year 1827, I think.

660. When were you appointed?

I was employed, I think, in January or February 1827. In 1826 I was connected with the military department of the Engineers for a month, I think, or two months, and I was then with Mr. Griffith on the Boundary Survey, just before I was of age. I had not an appointment, but I was previously a pupil of Mr. Johnson, the architect of the old Board of Works, and afterwards a pupil of Mr. Semple, who was architect for ecclesiastical buildings. After several years' connexion with the Boundary Survey, and some engineering works on the western coast of Ireland, I was connected with the Shannon Improvement, and had charge of the engineering surveys and designs for the whole of the Shannon, from Lough Derg to the sea, 70 or 80 miles in length.

661. When were you appointed under the Shannon Commissioners?

I think in 1836; I cannot recollect exactly.

662. How long did you hold that appointment before you were promoted to the Board of Works?

In that appointment I was subordinate to Mr. Buck, an engineer; that is, I had the charge for him of the part of the Shannon, to which I have referred; subsequently, I think in the year 1837 or 1838, I am not sure which, I had the charge myself, as the engineer, under the Commission of Inquiry of the Upper Shannon, from Lough Bodarrig, above Roosky, to the source of the Shannon and the Boyle water; then when the Act passed in 1839 for the execution of the works of the Shannon, I was appointed district engineer for the whole of the Lower Reach of the Shannon from Lough Derg to the sea. In 1842 I left that department, and became, as I have stated, Commissioner of Drainage and Inspector of Fisheries. In 1845 I was appointed Commissioner of Fisheries, and in 1846 appointed Commissioner of Public Works.

663. You are charged especially with the duties of the drainage department?

I am.

664. Do you feel that you can exercise, practically, a control over that department

department without being materially interfered with by the other members of the Board of Works ?

No; mine is departmental duty, performed in concurrence with the whole Board. The general principles of everything are settled with the whole Board, and I carry out the departmental duty of the drainage, the fisheries, &c.

665. In what case would you refer to the Board; would you refer to the Board previously to recommending, for instance, a subordinate officer ?

The appointment of every subordinate officer is approved of by me after I have considered the case; it is then considered by the Chairman, and sanctioned by him; and as to a certain class of appointment, which we call staff, it goes over to the Treasury, and must receive their approval before it is carried out under present arrangements.

666. Do you test the qualifications of the different parties who are to carry out the drainage operations ?

I have repeatedly done so myself, and sometimes by sending them for examination to the very experienced chief engineers that we had from a very early stage of the drainage operations.

667. That is your special duty ?

It is.

668. Do you recollect Mr. Harding being appointed ?

I do.

669. Have you any statement which you wish to make to the Committee previously to further questions being put ?

I have. Having had ten years' practical experience of the administration and operation of the Acts for the "Promotion of Drainage" and "Improvement of Navigation and Water-power in connexion with such Drainage, in Ireland," and having devoted more than 16 years' continuous attention to the subject, I desire to record my conviction of the impracticability of adequately explaining the operation of the law, and making your Lordships fully acquainted with the subject, so that just and equitable conclusions may be drawn, unless the explanations be afforded seriatim in distinct classes in the order in which the operating causes have produced the present results.

As the administration of the law by the Board of Works, and more particularly by myself, as the executive Commissioner, has been impugned, it will perhaps be conceded as justly due to that Board, that the course, in their opinion, best calculated to lay the whole truth before the Committee, if not inconsistent with your Lordships' rules, will be adopted, and I can vouch for its being the briefest mode to put the Committee in possession of the facts, and do justice to all parties. In anticipation of your Lordships' approval of this course, I have prepared myself to give evidence, and arranged the necessary papers and documents brought to London for the purpose under the following classes or heads of subjects, in which order, I respectfully submit to your Lordships, it would be advantageous to examine me. 1st. The law, its operation, and the causes which led to its alteration, with its adoption by the proprietors as a means of affording relief by reproductive employment during the famine. In the complaints published, it is implied that this was neither an object of the Legislature, nor the proprietors. Unless the Committee are apprised of the facts on this head, I believe it will be nearly impracticable to make the rest of the subject clearly intelligible; upon this all the rest hinges. 2d. Estimates, designs of works, with the causes of excess and changes. 3d. The system of executing the works. The actual cost of the works, and the comparison of both, with the general contract system, and cost of other works, illustrating, by the result, that not only is the cost of the works under the Board's system, with all the disadvantages of the famine, as cheap, but much cheaper, on the whole, than any similar public works executed on a different system even in favourable times. 4th. The results or improvement effected in the lands. These are, with few exceptions, fully commensurate with the cost of the works, and, where rendered available, afford the means, from the increased productiveness of the lands, of defraying that cost, drawing a distinction, however, between cases where the lands are in possession of the proprietor, or held under him by tenants. 5th. The final awards and repayment of the expenditure, with the security for money advanced. 6th. The particulars of each district, explaining, as far as practicable, any matters calling

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for consideration. Though this would appear to occupy a great deal of time, yet I have so prepared the papers that, if your Lordships approve of this course, I can either curtail it to this day, or, if your Lordships can give me a second day, which I believe to be essential to an explanation of the general subject, I could then just so extend the amount of information as to bring it within the limits of the two days.

The Witness is directed to withdraw.

The Witness is again called in.

670. The Committee do not quite understand in what state you have this explanation; have you it in such a state that it could be sent at once to the Printer's?

No; what I have are merely memoranda that will enable me to make an oral statement, and to answer questions under those heads which I have mentioned; and in order to save time, knowing that your Lordships have expressed to some of my colleagues that you can only sit this day, or perhaps another, in consequence of the state of the Session, instead of inflicting upon your Lordships all the details of these papers, I have had short abstracts of them made where they relate to anything of importance.

671. You have memoranda of the course of examination?

Yes.

672. Then you do not wish to lay before the Committee a general view; you wish us at once to go into the examination?

I do not think that that would be so satisfactory to the Committee as the course of being examined, after I have explained a head of the subject, if your Lordships choose to ask me any question on that head in order to explain it, and then passing to the next.

673. Will you have the goodness to proceed?

In few countries was the necessity for arterial drainage more evident for ages than in Ireland.

Before the Union the legislation in reference to inland navigation recognised the importance of improving the rivers.

The Bog Commission in 1809–10, and subsequent years, clearly pointed out the evils, and the necessity for removing the obstructions from rivers.

At length the Act 1 & 2 Will. 4, c. 57, commonly known as More O'Ferrall's Drainage Act, was passed for the purpose, and three separate modes were laid down by that Act for executing such works, namely, by Joint Stock Companies, by Proprietors themselves, and by Grand Jury Presentment for small cases under 200 *l.*; these systems were organised to enable proprietors themselves to have the rivers improved thereby.

674. Will you explain what you mean by joint stock companies?

They were created by receiving a commission from the Lord Lieutenant, after compliance with certain provisions of the Act to which I have referred; they were, in fact, joint stock companies of speculators, formed, not for the perpetual enjoyment of the results of the drainage, but merely to execute the works, to receive a certain profit out of them, and then their powers were, I think, to cease.

675. Who was to fix upon the works?

They were to propose them to the Lord Lieutenant in Council.

676. Without any reference to the proprietors?

They were required to obtain the assent of the owners of two-thirds of the land.

677. What is your distinction between proprietors and joint stock companies; the joint stock company was only the mode of raising the money, was it?

No; it was to execute the works, and to raise the money, and to proceed with the whole of the operations; then there was another class of cases.

678. What is the date of the Act?

1831.

This

This Act, with an amendment, called the Rivers Act, 5 & 6 Vict. c. 105, passed in 1842, to facilitate its operation, is still in force, as is also the 43d section of 9 Vict. c. 4 (applicable to small cases), giving proprietors, where unanimous, a power to execute the works themselves, after having plans made under the Commissioners of Public Works, and finally to have the award made by the same body. Under this system of legislation, therefore, it has been and is open to parties interested to proceed with such works without the intervention of the Commissioners of Public Works, and upon the principle of having themselves the control of their measures.

However, this legislation was found inapplicable in many classes of cases; but one commission, that for Lough Corrib, issued to a joint stock company, which completely failed of its object; and the power to operate by grand jury presentment, though extended by the 5 & 6 Vict. c. 105, to cases of 500 *l.*, was only brought into operation in, it is believed, one or two cases, whilst in no instance that is known to me have the proprietors co-operated to avail themselves of the powers directly vested in them, though there are, no doubt, many useful cases of moderate extent, and free from peculiar difficulties, which they could have effected under any of these last-mentioned powers.

In the year 1835 the Act for a Commission of Inquiry into the improvement of the River Shannon, the great drain of the central plains of Ireland, having passed, the public attention became, during the proceedings under it, awakened to the rapidly increasing evils resulting from the existence and increase of obstructions to the arterial drainage of the country, and between that year and 1842 repeated propositions of law were made to Parliament for a General Drainage Act, and Bills were introduced to the House of Commons for the purpose, many of the proprietors in Ireland urging such a measure as indispensable to the improvement of agriculture, and as a useful adjunct to the then new Poor-law, by providing profitable employment for the labouring classes in lieu of increased poor-rates for their support in idleness. In 1841 a Bill was introduced by Lord Morpeth, on the part of the Government, for the purpose; but not having been carried, in the year 1842 Sir Robert Peel's Government took up the subject, revised the Bill, and after full investigation before a Select Committee of the House of Commons, the General Act 5 & 6 Vict. c. 89, for the Improvement of Drainage, Navigation and Mill-power, was passed by the legislature, and received the Royal Assent on the 5th of August in that year.

679. That is the original Drainage Act?

It is. This Act was *enabling* in its principle, founded on the voluntary initiation of the parties interested—organising a system to produce co-operation in measures involving a great many parties, and requiring compulsory powers—affording the service of the Board of Public Works and its staff, with a Drainage Commissioner added for its administration—requiring the assent of the proprietors and occupying tenants of two-thirds of the acres to be drained—requiring the funds for preliminary expenses to be provided by the applicants, and implying that the funds for the execution of the works themselves should be procured on the system laid down in the Act through the active exertions of the proprietors themselves; and each step in the proceedings preliminary to the Board's commencing the works was guarded with lengthy public notices, lodgment of plans and documents, and appeals for parties objecting.

The connected history of the whole of the operations under this Act and its amendments was recorded year by year, and published in the First, Second, Third and Fourth Annual Reports for Drainage, in the monthly Reports published with the Relief Correspondence during the famine in 1846-47, and in the Sixteenth, Seventeenth, Eighteenth and Nineteenth Annual Reports of the Consolidated Board of Public Works; and, in my opinion, no brief abstract can adequately explain these operations, and the gradual effect of different causes, without a careful perusal and consideration of the whole of these Reports. The basis of the whole legislation, as regards compulsory power, after a work is once undertaken, is to make perfectly secure the money borrowed, and to carry the measure to a successful issue.

Independently of the examination, surveys, &c. of 452 districts in various parts of the country, many of which are exhibited on the map of Ireland, in the general correspondence which has been laid before your Lordships' House, the works have been undertaken in 121 districts, extending into nearly all the coun-

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ties of Ireland, for the drainage of the lands of about 3,100 proprietors, besides the improvement of very extensive lines of inland navigation, and the increase of mill-power. Up to the end of last year £. 1,496,000 has been expended, 35,516,747 cubic yards of *measured* earth and rock-work have been excavated, about 192,000 acres, including some of the finest alluvial lands, have been relieved from floods, whilst the most important works for the relief of 141,600 additional acres have been carried into execution, and profitable employment has been afforded to an amount equivalent to the labour of about 17,843,300 men for a day, in the works for carrying off the waters from catchment basins of 6,751,305 acres. Of the whole 121 districts, the works of only six districts were undertaken under the General Act 5 & 6 Vict. c. 89, passed in 1842, before an Amendment Act (8 & 9 Vict. c. 69), was passed in July 1845; nor were any additional works commenced until the Act of 9 Vict. c. 4, was passed on the 5th of March 1846, and thus it will be seen that 115 of the districts referred to have been commenced under the operation of this code of laws, as amended by the last Act, namely, 9 Vict. c. 4.

680. Will you have the goodness to state the six instances which were commenced before that?

They were the Ardee, the Blackwater, the Borrisokane, the Oranhill, the Cahore, and the Kilmannock; those were commenced before the passing of the 9 Vict. c. 4, in the year 1846.

This Act of 9 Vict. c. 4 was presented to Parliament by Sir Robert Peel's Government, after the most urgent applications of Irish proprietors, and deputations to the Irish Government from the Royal Agricultural Society of Ireland, and other parties and bodies, some complaining, for more than two years, of the delays in preliminary proceedings under the first Act, demanding more compulsory powers to be given, and urging even in some cases that the Government should authorize the progress of the works without the assent of the proprietors.

681. If any other works are stated to have been commenced, or at least the money to have been raised before 1846, is that an error in this Report; there were only six commenced before 1846?

I think so.

682. What, in your opinion, was the cause of so few having been commenced before the Act of 1846; was it a deficit in the Act, or the unwillingness of the proprietors?

It was partially both; there was a great unwillingness to provide the preliminary expenses; there were great delays in obtaining sufficient funds from individuals to complete the two classes of surveys which were required under the first Act, and even after they were completed, there was great slowness on the part of parties to send in their assents. A majority to the extent of two-thirds of the acres was required, and they were very slowly given in.

683. Was that remedied by the subsequent Act which you mentioned?

Yes.

The Resolutions of the Royal Agricultural Society which were presented are here, and I have the Resolutions adopted by a meeting of the subscribers to the Fergus Drainage, and a variety of letters (with which I fear I should occupy too much of your Lordships' time), pressing upon the Government to change the Legislation, to make it more compulsory, to take the whole measures into their own hands, and to proceed with them (even going that length on the part of some parties), for the purpose of affording immediate employment of a useful nature.

684. With regard to those six cases which you have mentioned, it appears that in some of them there was a considerable addition to the outlay estimated for; can you give any reason for that; for instance, in the case of Ardee, the original estimate was 8,388*l.*; the amount actually expended was 17,820*l.*, and there remains to be expended 1,883*l.*; the area was not varied?

The explanation of the Ardee case is given in a Parliamentary Paper which has been published and laid before your Lordships' House. It is a very long one. If your Lordships wish that I should go into it now, of course I shall do so; but, for the reasons which I venture to state, your Lordships will find that it will be more fully understood after I have proceeded with the other heads of the subject.

685. Will

685. Will you explain the circumstances of that case?
I do not know that I can add one word to what is in this statement; it is a very long one.

686. Will you give us the substance of it?
The substance is this: That the originally proposed works were executed for very nearly the original estimate; that the district was, so far as the original project was concerned, completed; that the lands were cultivated and improved to a very great extent by the people, when, owing to the improvements required in the upper parts of the country during the famine, the waters from the upper districts were poured down to a much greater extent than had ever been contemplated by the engineers who made the first Reports and design for the Ardee. As long as the lands in the upper part of the country remained the recipents of floods, and dealt them out in small portions, the drainage works executed in the lower part of the Ardee district was sufficient; when that was changed it was found to be insufficient. Besides, at the time that the Ardee work was commenced, it was designed under what was called the shallow system of drainage. The more advanced knowledge and accumulated facts with reference to the rain-fall, and the discharge consequent upon rain-fall in Ireland, showed, that when the whole upper country came to be improved, the original project would be insufficient in scale, and it proved so on one or two occasions. The result was, that many of the proprietors objected to an award being made in that state, and the Board were delayed for a year, or two years, from remedying the defect, by want of funds to effect that which they promised they would do, namely, to increase the scale of the works. We did then proceed: in the year 1850 we received funds from the Government, and proceeded with the works for one year, when rather an angry correspondence took place with one of the proprietors, or rather on his part with us, in the year 1851: he objected to the measures having been proceeded with, without getting the assent again of the proprietors. We explained that we had no legal right to ask or be concluded by such assents, and explained the circumstances. The district is now finished, or nearly so, and the lands are in a very high state of cultivation and improvement, and the expenditure has been, as your Lordships see before you, more than double what was orginally contemplated; but still I hope to be able to show your Lordships that the improved value in that district, notwithstanding those circumstances, will pay the whole cost.

687. We suppose that one-half of the proprietors agreed to an expenditure of 8,388 *l.*?
They assented to the drainage.

688. Under an estimate?
Under an estimate; with an estimate before them.

689. That estimate was 8,388 *l.*?
Yes.

690. You spent 17,820 *l.* Who is charged with the payment of that money?
The lands benefited.

691. But what lands?
The lands of the proprietors in the district.

692. The district that had agreed to spend 8,300 *l.*, or any additional lands?
There are no additional lands, I believe, in that case; it was one of the ordinary cases.

693. Are those parties who agreed to the expenditure of 8,300*l.* charged with the expenditure of nearly 21,000 *l.*?
The lands of all the proprietors in the district are to be charged with the actual expenditure, and the improved value or productiveness of those lands will of itself pay that expenditure: it is paying a portion of it already before the proprietors have repaid any money.

694. But you must have additional assents, second assents?
No; it was under the original Act and it is this misunderstanding about second assents which makes me so very desirous to bring that subject first before your Lordships.

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695. With respect to that case, the specific complaint against the Board of Works is, that they undertook part of a district, and not the whole, and that the result of their undertaking part, and not the whole, was to throw a large portion of the expense that ought to have been borne, say, by the upper part of the district, upon the lower?

It is a fact that we undertook a portion of a river; but we undertook that which formed a complete district, and we were very much pressed by the proprietors to confine the operation still more in the commencement. They wanted the operations to extend only from Ardee up to a Mr. Singleton's residence. I have a map in the room which I can explain. We declined to do so, because that would not effect the drainage of that part. The portion of the country above that, called the Nobber district, has a very rapid fall for some miles before you come to the next flat plains, and would constitute a separate district.

696. However, the practical effect has been, that an expense has been thrown upon the lower district which ought naturally to have been borne by the upper district?

No, I am not aware that that is the fact. If we were to undertake new districts now, we would decline to undertake anything but a whole river, from the bottom to the source, so far as there were flooded or undrained plains of land; but it does not follow necessarily that any portion of the cost of the works of the Ardee district would have come upon the upper or Nobber district, because the whole expense of a district is levied off each portion thereof in proportion to the benefit conferred upon that portion, and not in proportion to the works which have been executed therein.

697. The proprietors were assembled to agree to this particular drainage. By the Act of the 6th of Victoria the consent of two-thirds of the proprietors was necessary, was it not?

The proprietors of two-thirds of the acres.

698. And they agreed to the expenditure of 8,388 *l.* Have you the means of stating what the rental of the whole property was at that time?

No, we have a valuation of the whole district, which is in London, but I have not it here.

699. When did you become aware that 17,850 *l.*, or rather 21,000 *l.*, was necessary?

We became aware of the necessity for increased expenditure, I think, in the year 1848. We were about to make the award when we received a letter, which is set forth in the Parliamentary Papers on the subject, from Mr. Singleton, and subsequent letters from other proprietors, complaining that the measure had not been successful, and trusting that we would not make an award.

700. There is hardly one of these cases where the expenditure has not exceeded the original estimate. In the case of Blackwater the amount actually expended was 12,115 *l.*, and the amount of the original estimate was 10,000 *l.*?

Yes, I will explain that, if your Lordships wish.

701. In Borrisokane the amount of the original estimate appears to have been 3,486 *l.*, and the amount actually expended 9,296 *l.*, and there is required another sum of 580 *l.*, making, in fact, nearly 10,000 *l.*?

The proprietors applied, in that case expressly, to have the measure changed from a shallow to a deep drainage system.

702. But the area does not seem to have been very much increased?

Not much; the proprietors were so far benefited, and saw the advantages of the deep system, that they memorialized us expressly (and I have the paper here) to make it a deep, instead of a shallow drainage, and the award made upon that district, which your Lordships will find in the general correspondence (page 454), shows the results. We declined at first to go any further in that case. The distinction between it and the case of Ardee, is this: In Ardee, notwithstanding the complaints of the proprietors, we should have proceeded to make the award on the shallow system, if the district had been entirely freed from flood. The facts which I have explained, and others which I have to bring before your Lordships, will show that the original project of the engineer failed in accomplishing that object. We therefore, as imperatively bound to all the interests in the land, the

the inheritants, the mortgagees and others, whose claims were ousted by the priority of the drainage charge, and being also trustees for the lenders of money, deemed it our bounden duty to go on, more particularly when we were remonstrated with by several of the proprietors on the inefficiency of the drainage. In the Borrisokane case we accomplished in the first instance the object that was first proposed, which was merely to relieve the lands from flood. The proprietors began to thorough drain; they began to cultivate the lands, and they found such advantages arise from what had been done, and such deficiency from the want of depth as regards thorough drainage, that they applied to us to make it a deeper drainage. We declined until we should receive a memorial from the proprietors of more than half the lands. We did receive that memorial, and we proceeded to execute the works at a much less additional cost than the engineer who was directed to report on it wished to have expended on the district.

703. Then in fact in these cases there was a failure on the part of the original engineer who estimated for those drainages?

No, there was no failure in accomplishing the objects they had then in view.

704. What was subsequently done in the Borrisokane case was with a view to a deep thorough drainage?

Yes, and also keeping the floods at a lower level.

705. In that case the proprietors were regularly consulted, just as if the work had not been commenced at all?

No; they pressed it upon us, and we put it in that position, that they were obliged to press it upon us, because the drainage there had to a great extent succeeded in accomplishing the object which was first proposed, namely, to relieve the lands from flood. In the case of the Ardee, it failed to accomplish the first object, in consequence of the opening of the upper country, with the other causes explained in the published papers, and it became necessary to carry out a deeper drainage. In the Blackwater case, in which the expenditure was 12,000*l.*; allow me to explain that the estimate for the Blackwater was made under Mr. More O'Ferrall's Act, before the passing of the Drainage Acts, and it was made by myself; it was an estimate for 10,000*l.*; that was almost the only matter of a professional nature which I ever performed for private parties; I have always been in the Government employment; Sir John Burgoyne requested me, however, to make an estimate for the Blackwater, for the proprietors, under Mr. More O'Ferrall's Act; I did so; it amounted to 10,000*l.*; we executed the works proposed for 8,000*l.* The proposition of the proprietors, and their idea at the time, was merely to get the floods off the lands; they said, "Do not do anything more; we do not want anything else;" and many would not listen to anything more. When we found that we had accomplished the object proposed for 8,000*l.*, we found the marsh lands to subside very much, and also that it would be desirable to spend at least the 2,000*l.* additional in taking 18 inches more out in depth of the channel, which was accordingly accomplished. Then there were additional expenses connected with the delays, increase of interest and so forth, that accumulated during this subsequent proceeding, which raised the expense up to 12,000*l.* Now the desire of the influential proprietors on that drainage is to take three feet more out of the channel, and they have derived such advantages from it, that Mr. More O'Ferrall himself, for instance, and others, have admitted that the productiveness of the land has been increased from five to eight fold in very many instances.

706. But in that case you had the consent of the proprietors?

No, we asked no consent in any ordinary case. We could not do so according to law, or at least be bound by the results.

707. Are the proprietors liable to any charge which the Drainage Commissioners may think it right to inflict upon them in the execution of any work?

They are liable to the whole expenditure that shall be incurred in accomplishing the object, namely, the drainage of the lands.

708. Are proprietors, who have agreed to a work being executed upon a small original estimate, liable to be taxed to the amount of double that estimate without their previous consent?

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Under the ordinary proceedings they are, if it be necessary for the accomplishment of the object. The whole principle of the Act of Parliament is that the drainage shall succeed. The matter was very much discussed in your Lordships' House, and very strong objections were urged by, I think, Lord Cottenham; he was not then Lord Chancellor, but it was the year previous to his being so; he objected, in the strongest way, to a first charge being granted on those lands, except upon the basis that the drainage should be completed and successful, because the result otherwise would be, that if a measure failed, the persons who had mortgages on those estates, the inheritants, the annuitants, and others, would have their priority disturbed without getting any equivalent advantage. Therefore the whole frame of the Act is based upon the principle that the administrative body shall carry it to success.

709. But how would that apply when the expense might be much greater than the increased value of the land would repay?

No such case has occurred, except one or two, of places taken in from the sea, which I intend to bring before your Lordships.

710. Still we understand, from your answer, that the Board of Works in Ireland feel themselves authorized, upon the receipt of the consents of the proprietors to a given expenditure, to go in the execution of that work to double that amount, or any further extent, without consulting the proprietors at all?

Theoretically it is so; practically it is not; practically the proprietors are aware of it. They are informed of it every year in our Annual Report—of every thing important that takes place; and under the summary proceedings—which I am anxious to explain first, for they include the largest class of the cases under my first head of "The Law"—your Lordships will find that we take the opportunity of consulting them, which is prescribed by law, namely, at the time when the expenditure comes to 3*l.* an acre.

711. That is by a subsequent Act of Parliament, is it not?

Yes; under which 115 of the districts have been proceeded with.

712. Which puts a limit to your power of increase to the amount of 3*l.* an acre, does it not?

It puts a limit proposed by the Board of Works themselves to expending any greater amount until the matter is brought under the ordinary proceedings.

713. That is to say, you cannot exceed the 3*l.* an acre beyond the original estimate until the proprietors have given a second assent?

No; many of the original estimates were for 5*l.* or 6*l.* an acre, and the assents were given for them. The estimate for the Fergus, for instance, was about 44,700*l.*, and the 3*l.* an acre amounts to about 25,000*l.* As soon as we approached that limit, we ceased, and issued the Supplemental Report, and called for the assents again.

714. Then, after having given in an estimate of 44,700*l.*, when the amount has reached 3*l.* an acre, it is necessary to obtain a second assent; is that so?

Yes.

715. In the case of the Fergus, the complaint is, that it is a work which never ought to have been undertaken; that the proprietors were deceived by erroneous valuations made as to the advantages of it, practically speaking, when carried out, and that there will, in fact, be no security for the loan advanced upon it; that is substantially the complaint with respect to it?

If that were the case, we should not recommend it to be proceeded with. From all the information we have received, and from actual examination of the lands by our engineers, and by myself, we have drawn a very different conclusion.

716. It is stated in the Return, that in the Fergus case 44,700*l.* was the original estimate, and that no money was spent upon that original estimate; is that so?

No; all the expenditure has taken place under the original estimate or report; your Lordships will find the expenditure under the head, "But where unfinished," in page 5 of the Return in your hands.

717. The works were commenced in 1847?

Your Lordships will find under the head, "But where unfinished," that the original

original estimate was 44,762*l.*, that the revised estimate was 48,569*l.*, and that the expenditure up to the 30th of September 1851, was 26,845*l.*

718. However, you find, in the column of the amount actually expended, which is under the first estimate, that there is no sum entered at all?
That column applies to cases where the work has actually been finished, and the award made.

719. In the Fergus case no award has been made, because it is at present stopped for second assents?
That is the reason why it comes under the second head.

720. Then here is a case where the applicants consented to an estimate of 44,700*l.*, and after an expenditure of 26,000*l.* they refused their second assents, and, therefore, the work is unfinished?
It is so, and there are several other cases of that kind.

721 Under what Act was that?
The 9 Vict. c. 4.

722. Have you that Act here?
I have; we have a similar case at Lavally, near Athenry; the expenditure there is very considerably under the gross amount of the estimate.

723. In the case of the Fergus drainage, did the Commissioners, having given an original estimate for 44,000*l.* for the draining of an area of 8,388 acres, take into consideration that that was more than the 3*l.* an acre which they were allowed to expend under this clause?
Yes; if your Lordships would permit me to go through that part of the subject, you would find that our instructions were to make the estimates irrespective of any limit; they were to tell the truth as near as they possibly could, and it was done so in that and in every other district, as well as the time and the circumstances of the famine could permit.

724. Of course these estimates were submitted to the Board of Works, and the Board of Works had the power of consenting or refusing their consent to the undertaking of such works?
Yes.

725. Were the Board of Works aware of this provision that restricted them from exceeding the 3*l.* per acre without a second assent?
Certainly; they proposed it themselves.

726. Then in this case did they sanction an expenditure of 44,762*l.* to drain 8,388 acres, which was more than 3*l.* per acre?
Certainly; and it was in anticipation that the second assents would never be refused, for it amounts to an actual defeasance of the Act to do so; if your Lordships would permit me to explain this subject, it was at this very point that I was about to take it up.

727. You cannot tell the Committee what increased value was expected upon these works?
Which class of works?

728. The Fergus?
It is stated in the Report; the probable increased value is stated in every Report laid before the proprietors.

729. Can you refer to any paper telling us of the increased value which was expected?
Yes.

730. Be good enough to refer to it?
I find in the Supplemental Report (page 371 of the general Correspondence), that the improvement of the 9,557 acres was calculated to be 4,061 *l.* 14 *s.* 6 *d.* per annum.

731. Or nearly 16 *s.* a statute acre?
Eight shillings and sixpence.

732. You mean that upon the gross estimate it was calculated that there would be that improved value upon an expenditure of 49,000 *l.*?
Yes.

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733. Will you proceed with your statement?

I have explained to your Lordships the pressure that was brought upon the Government and the Board to alter the law, and it is perhaps sufficiently set forth in this paper. Sir Thomas Fremantle, at that time Chief Secretary for Ireland, referred the matter to the Board of Works and to me individually.

734. In what year?

On the 31st of October 1845 he referred the matter to the Board of Works, and called for our opinions. Our opinion was conveyed in this paper (dated 17 November 1845), which I beg leave to read to your Lordships:

GENERAL DRAINAGE ACT EMPLOYMENT.

OBSERVATIONS on the Alterations which might be made in this Act to expedite the Works to be undertaken under its Provisions.

That as regards the principle of the Act,—

Some parties propose that this Act should be made wholly compulsory; that the Government should, on its responsibility initiate, undertake and carry through works of this class, and recover the expense by instalments from the properties benefited; others propose that the Commissioners of Drainage should initiate the inquiries; and where they find the improvement will yield, in their opinion, 6 per cent. upon the outlay, they should, without receiving any assent, proceed with the works, first giving dissentient parties an opportunity of appeal to some legal court to try and decide the question whether the case should be proceeded with.

It is confidently submitted, from several years' consideration of the subject and experience of the working of the law, that either course would be highly impolitic and contrary to sound constitutional principles—would serve to degrade and divide the proprietors and leasehold tenants of the country, instead of encouraging them to co-operate and rely upon their own exertions for the improvement of their property—would be calculated to array them in hostility against the operation of the Act, and its administration by the Board—and, finally, however, stringently the provisions for the recovery of the expenditure were framed, would open the door for the practice of every device to resist repayment—frequently enlist local, if not public opinion against repayment, and ultimately lead to much loss, and promote a vitiated state of public morals as regards the responsibilities incurred on the part of the public; besides these plain, though abstract reasons for not adopting such a course of legislation, no practical case for its necessity is made out. The General Drainage Act was passed late in the year 1842, and of the 14 districts in which the whole of the preliminary steps have been taken by the Board, only three may be said to be suspended, and of these only one, and that very recently (the Roe), on grounds which could in any way be deemed a justification for adopting such a course (though it is submitted the refusal of a majority to assent would not be a justification). Of the other two, one has been delayed a year for want of the Admiralty's consent to the formation of an embankment, and the other from want of exertion amongst the proprietors to procure the entire amount of assents, although the Board have received in that case the assent for much more than one-half the district. The delay in preliminary proceedings complained of in other cases, and the neglect of proprietors to provide the small amount of funds for surveys, and so forth, which admittedly retard the operation of the Act, arise from other causes, as explained in another paper of this date, and are in no way attributable to the leading principle of the law. Others with more reason, propose that upon the completion of the first or preliminary survey the assents and dissents should be taken; that those acres for which neither were given, should not be taken into account, and that if a simple majority of the remainder (instead of two-thirds of the whole, as at present) were assented for, the works should proceed. Others propose that the assents should be taken negatively; that is, only the dissents should be taken to be furnished within a given period, and if these did not amount to one-third or one-half, according to the different views of the parties, that the measure should be proceeded with.

All these propositions, however, strike at the root of the leading principle of the Act: its active voluntary character, which received the attentive consideration of the legislature for several Sessions, which chiefly give stability to its working, disarms vexatious opposition, ensures final co-operation, and best guarantees the steady and quiet repayment of the expenditure. It is evident nothing should be done to endanger the punctual repayment of the money to be expended, as it is to be borne in mind that the funds for these purposes are and will be provided by various parties nowise interested in the works, as well as by the Government.

Were it not for the urgent circumstances of the present period, and the very generally expressed opinions of the subjects, I certainly would not be disposed to recommend any alterations in the extent of the majority which should decide upon the adoption of each case, trusting to the influence of public opinion and the improved knowledge of the benefits of drainage; that in most instances (though perhaps somewhat slowly), the requisite amount of assents would be obtained. But under existing circumstances, and taking into account the number of proprietors who are absentees, the apathy and neglect of others, however great the benefits to result, and the delay which has often arisen in getting the assents for two-thirds

thirds of the acres, even where there were few or no positive dissents, whilst the *assent for one-half the acres* in a district *has generally been quickly obtained*, it becomes matter for most serious consideration, whether the ultimate condition upon which the provisions of the Act are rendered available in drainage cases should not be reduced from a positive assent in writing of the *proprietors of two-thirds in extent of the lands* to be improved, to a similar assent *of the proprietors of any quantity exceeding half the extent of the lands to be improved* in each district.

In most other matters of public, or even private importance, the vote of a simple majority predominates, and as in these cases the ultimate power of deciding whether the works shall proceed is vested in a public responsible Board, and the whole progress of the measure, works, rating and all, is under the guardianship of such a body, it seems safe and reasonable that the *bonâ fide* assent of a majority in extent, and which is in effect (as far as is practicable at that stage of the proceedings) a majority in liability to repay, should be binding on the minority.

It is submitted that such an alteration, though in effect a *modification* of a fundamental principle, would not deprive the Act of its voluntary and equitable character, nor injuriously affect its final operation, or the repayment of the expenditure under its provisions, whilst it would admittedly expedite its operations in the early stages.

2dly. With reference to delays in Preliminary Proceedings.

The question of the provision of funds for these inquiries has been alluded to in another paper of this date. Perhaps in any new Act on the subject, it may be deemed advisable to provide legislative security for the recovery from *all* parties concerned in districts to be investigated, of sums expended in these inquiries where the works do not finally proceed.

But the chief matter under this head, and a great source of delay, is the detailed valuation and minute territorial survey of all the holdings (which in Ireland are often very small and numerous) in the flooded lands in each district required to be completed *before* the assents can be taken or the works proceed. This valuation and survey is, however, essential, in the present frame of the Act, in order to ascertain the number of acres for which each assent is valid, and to put upon record the value of the lands before the improvements were commenced, upon which, in a great measure, depends the subsequent security for the undertaking, as it is to the difference between that value and the increased value that the only first charge given by the Act attaches. As a preliminary proceeding, however, it is very tedious and expensive, and is substantially good only for recording the present value of the lands; for in no other respect is it conclusive, or can it be considered other than an estimate of results, which, with the experience now obtained, could, for all practical purposes in that stage of the proceedings, be approximately made with sufficient accuracy (the average of most of the districts already valued not varying very materially), without incurring the expense and delay of this survey in detail at that period. If the security under the Act were a first charge, without any priority to previous incumbrances on the lands drained, and a charge in the order of its date (as by the Act at present) on the lands of the same estate within a mile, then the difficulty would be entirely removed; the detailed territorial survey and valuation might then be postponed until after the works were commenced, and would be then made for the legitimate and chiefly useful object of adjusting the applotment of the expenses at the final award. And the only preliminary survey of this class which would be required, in addition to the engineering survey, would be of a cursory or approximate character, founded on the Ordnance Survey, with a general approximate valuation, both of which, by the provisions of the new Act, might be declared sufficient for all the purposes of assent, and that no omission or misdescription therein should vitiate the ulterior proceedings or liabilities to repayment, and which, in effect, is the state of the present law, after the most expensive and tedious proceeding. But this change in the security under the Act would not only remove this and other difficulties, but render fully and cheaply available (as at present the provisions are applicable) the whole machinery of the Act for the drainage of the vast tracts of waste lands and moors in various parts of Ireland, and the thorough drainage of estates on economical principles. As it is now very generally admitted that the increased value of the crops, resulting from the drainage of lands, will in a very few years repay the whole expenditure, and as the repayment by instalments under the Drainage Act may be extended over 10, 12, 15, or more years, according to the circumstances of the case, it is evidently the interest of incumbrancers to consent to give such a priority, whereby alone their security can be permanently increased, and by such an arrangement in nowise lessened, even in the first instance, the increased value being at least equivalent to the charge where so subdivided.

Many details connected with this subject would require to be practically explained to render this paper complete, but would occupy too much space here for the present occasion. It may, however, be distinctly asserted as capable of demonstration, that by the adoption of such a change alone would it be prudent, safe, or practicable to dispense with the completion of the detailed territorial survey and valuation before undertaking the execution of any measure of drainage.

Upon the adoption of this change then depends the question whether the works can be commenced next year in many of the cases before the Board at present, and which, for want of funds, have not been advanced in their preliminary stages, and in the still greater number which might be brought before them and proceeded with if such a change were effected.

Under these circumstances, it seems to be of pressing importance that the sense of the Irish proprietors and the decision of the Government should be had on this view of the

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subject without delay. It will be readily seen that such changes as those proposed in this paper at once disembarrasses the proceedings of their greatest sources of delay, and by simply fixing the security, remove the necessity for the greater part of the prolix inquiries at present requisite. If the alterations here proposed be approved, a very short Act can be prepared, curtailing all the preliminaries to the minimum of what would then be requisite, and rendering by a few clauses the whole provisions of the present Acts available for the prosecution of the requisite works next spring, if the Act referred to be passed at a very early period.

To meet exigencies during next year *of a still more pressing nature than any heretofore contemplated* in these papers, and to afford immediate employment in a great number of places throughout the country, a short Act could be framed, empowering the Board, upon the application of a certain proportion of the proprietors interested in any tracts of land to be drained, to proceed at once with the execution of such works as appeared requisite, not exceeding in the whole some fixed limit of expenditure, say 3 *l.* per acre on the average of the lands drained, such expenditure to be secured as hereinbefore mentioned, and applotted and recovered under the provision of the Amended Drainage Act from the lands benefited, and any further works beyond that limit of expense only to be undertaken and effected after compliance with the conditions and provisions of that Act."

735. Then you were suggesting an amendment in the Act by that?
We were asked to do so by the Irish Government; and this is the paper suggesting that which afterwards became the law.

736. It does not show the effect: the fact, as it comes out on the evidence, is, that the Board of Works were in the habit of undertaking works which, on their own showing, exceeded 3 *l.* per acre, they by Act of Parliament having no right to spend above 3 *l.* per acre; you read that document to show the grounds?
Yes, and that it was optional with the proprietors having the information before them.

737. To give the second assent?
To give the first and second assent.

738. But you find yourselves in this position, that the Board of Works granted that the work should be undertaken, knowing at the time that they could not carry that work into execution without a second assent from the proprietors?
Clearly it was the intention and frame of the very clause of the Act of Parliament; if your Lordships will read the concluding parts of it you will see that it is so.

739. Surely it was a limit to the Board of Works not to undertake works above 3 *l.* an acre?
No, it was only a limit not to expend more until we had got the second assents; and if we do not get the second assents, we are obliged to make the final award, and recover the money expended.

740. Is it not the case that you can only award for an actual improvement; if the works are interrupted before the improvement is secured, have you still the power of awarding?
We have; but a great injustice would arise in some cases; in cases where a great injustice would not arise we have made the awards. That paper which I have read was the first proposition of the summary proceedings. Here is a more deliberate paper, which was written three or four days afterwards, suggesting the details; and I beg to call your Lordships' attention to the fact of how clearly it was foreseen what was contemplated by the provisions for summary proceedings, and that it was to relieve the distress at the time by executing useful or reproductive works, instead of what were then called useless, namely, the roads.

741. What is the date of the document to which you now refer?
The 24th of November 1845; it was sent by the Board of Works officially to the Irish Government. The paper I have read is dated the 17th of November 1845. I have a third paper, which I propose that your Lordships should have placed upon your notes as relative to the ordinary proceedings.

742. Is it merely historical?
It is an account of what led to the changes at that time; the intentions of the changes at the time, and the causes of them.

743. Does it give any opinions which would require examination?

I do

I do not recollect that it does; in fact, it is an epitome of the Act which was afterwards framed; but we gave it on our official responsibility as the best way to comply with the demands of the time.

W. T. Mulvany, Esq.

18th June 1852.

The Witness delivers in the following Document:

Dear Sir, November 22, 1845.

I WAS delayed so long at the Commission in the Castle, that time was not allowed me to prepare the necessary information required respecting the best means of extending the drainage operations, as well as the fisheries. No delay shall take place in preparing the details: the accompanying paper contains the heads of the amendments which the Board consider it will be necessary to make. I shall take the liberty of sending to you a paper respecting grants in aid of grand jury presentments, which will only require Treasury sanction to afford great facilities for carrying on numerous useful public county works without a legislative enactment.

(signed) H. D. JONES.

HEADS of the ACTS which are proposed to be altered or amended.

DRAINAGE ACTS.

THE Drainage Act requires amendment in the following points:

The delay in the preliminary proceedings can be remedied.
The amount of and delay in getting assents or dissents.
Alteration in the security required to be a first charge on the land.
An alteration in the mode of supplying funds for preliminary expenses.

FISHERY ACTS.

Mode in which the funds for piers can be obtained.

To Sir Thomas Fremantle, Bart., Castle. H. D. JONES.

Sir, 25 November 1845.

IN compliance with the instructions contained in your letter of the 22nd inst., I have the honour to forward herewith, for the consideration of His Excellency the Lord Lieutenant, certain amendments to be made in the Drainage Acts, for the purpose of facilitating the operations to be carried on under those Acts, and which are contained in the paper marked A.; also propositions for providing funds in aid of local contributions for piers, roads, &c., paper marked B., and it is recommended that the Board of Works should be empowered, by the Lords Commissioners of Her Majesty's Treasury, agreeably with the Public Works Act, to make grants in aid of roads in remote localities equal to one moiety of the cost. Several years after this Board was appointed, the contributions by grand jury presentments of the other half was admitted, but subsequently the Lords of the Treasury made an order that they would not sanction any grants in aid of works, except in proportion to private contributions. Should their Lordships rescind this order, there is no doubt many county roads would be executed, if it was known at an early period that a public grant would or could be made in aid of them. The Board are prepared to offer any explanations that you may wish to receive; and if His Excellency should approve of the suggestions and amendments proposed, Bills can be forthwith prepared, ready to be introduced early in the next Session of Parliament, and which, if passed without delay, there is no doubt that very extensive employment might be afforded on public works at an early period in the spring.

I have, &c.
(signed) HARRY D. JONES.

To the Right Hon.
Sir Thomas Fremantle, Bart., Castle.

No. 1.

MEMORANDA.

EMPLOYMENT under the Provisions of the General Drainage Act, Ireland.

ASSUMING that the necessity may arise for the extensive employment of the labouring classes next season, whether under the provisions of the Acts as they stand, or aid by a short Act, enabling the works to be commenced without waiting for the completion of all the preliminaries at present required, it is of the greatest importance that arrangements be made without delay, and a decision arrived at as to what steps should be taken.

From experience in these matters, it may be confidently stated, that the course to be adopted should *be decided before the 1st December next*, so as to enable this Board to make the requisite arrangements for commencing the works next spring. The mere time required

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for the ordinary proceeding under the Act, the necessity to look out for and provide competent assistants, money, tools, &c. render so early a decision essential.

Formal applications, or memorials, have been received for the drainage of 45 districts in 29 counties in Ireland.* In 11 of these no funds for preliminary inquiries having been as yet provided, no proceedings have been taken, and in two others the parties having obtained a first report and plan, have themselves proceeded with the works.

* *See* Paper, No. 4.

The remaining 32 districts may be classed as follows:—

No. of District.		Observations as to State of Progress.	Length in Miles.	Extent or Number of Acres to be Improved.	Total Amount to be Expended.	Amount which might be Expended next Year.
					£.	£.
See Paper, No. 1.	6	Works in progress, two districts nearly complete - - -	60	10,357	† 11,500	11,000
See Paper, No. 2.	7	Meetings have been held; assents complete, or nearly complete, and works almost certain to proceed next season - -	187	32,393	101,722	56,000
See Paper, No. 2.	5	The preliminaries very far advanced, and works may proceed next season - - -	41	7,693	24,235	24,000
See Paper, No. 3.	7	Preliminaries in an advanced state, and, if assistance be given, could be prepared for work next season - - -	304	70,116	432,240	134,000
Total -	25	Districts which may be ready for Work next Season - -	592	120,559	569,697	225,000
See Paper, No. 3.	6	The first preliminary step taken or being taken, if assisted and proprietors assented, and the time for preliminary proceedings lessened, by a new Act, works might be commenced next season - - - -	say 81	say 15,139	say 94,168	40,000
See Paper, No. 2.	1	All the preliminaries complete, but majority of proprietors unwilling to assent; if they change their mind, works may proceed - - - -	12	2,863	17,034	7,000
	32	Total for Seven Districts -	93	18,002	111,202	47,000
See Paper, No. 4.	11	Add to this the probable estimated quantity in 11 districts for which applications have been made, and for which, if funds be provided and a new Act passed, dispensing with some of the preliminaries until works are in progress, the works may be commenced -	say 91	say 15,000	say, for drainage, 45,000	30,000
		Total for Eighteen Districts -	184	33,002	156,202	77,000
General Total -	43	Districts for the Drainage of which Applications have been made and Works, may be promoted - - - - -	776	153,561	725,899	302,000

† Balance of Estimates not yet expended.

From

W. T. Mulvany, Esq.

18th June 1852.

From the foregoing statement it will appear that, without alteration of the Act of Parliament, but with the assistance hereinafter referred to, employment can be given in 25 districts to the amount of 225,000*l.* This sum, deducting 10 per cent. for tools, superintendence, and other expenses, would give employment to 33,800 men for six months. The length of the districts through which this amount of employment might be given, is about 592 miles. It also appears in the other 18 districts applied for, that, by alteration in the Act of Parliament as regards preliminaries, with aid in the preliminary stages, if the proprietors of a sufficient number of acres assent, employment may be given to the amount of 77,000*l.*, which, making a similar deduction as above stated, would give employment to 11,600 men for six months. The length of the districts through which this amount of employment might be given, would be about 184 miles; being a total of 45,400 men through 776 miles of country, and, assuming five in family to each man, affording means of food to 227,000 individuals.

But if, to meet the anticipated emergency, it be deemed right to bring in a short Act permitting, on certain conditions, works of drainage to proceed to a certain extent without waiting for the preliminary investigation, as hereinafter more fully referred to, then the amount of employment may only be limited by the wants of the country and the means afforded; for cases where drainage is required exist in every part of the country, and very frequently in those most thickly populated; whilst the powers and provisions of the Act would also be applicable to the thorough drainage of estates or waste lands where necessary, as well as the opening of rivers and streams.

Works of this class are peculiarly fitted to meet such an emergency as that anticipated, diffusing employment of a simple class, which agricultural labourers can be easily made to perform, through so many parts of the country, bringing it home, in fact, to the very dwellings of the peasantry, and in their results not only preventing, to a great extent, the recurrence of the evils which called for their execution, but tending to alleviate, if not remove, the sickness and fever which in an undrained country is almost certain to follow a scarcity of food, or the use of bad food. It is also a class of work capable, to a great extent, of being executed by task, without expensive supervision.

In any view of the matter, it is presumed that the repayment of all expenditure of works of drainage, and local expenses connected therewith, shall be secured, as by the Act of last Session, upon the lands benefited, and in proportion to the assumed benefit; but where the opening of great natural navigation is inseparably connected with drainage, as described in pp. 9 and 10 of our Third Annual Report, it seems hopeless to expect that the measures can be proceeded with unless a conditional grant in aid of the cost of the navigation part of the measures be made by the public, as suggested and detailed in Mr. Mulvany's paper on the subject, dated 3d May 1845, written at Sir Thomas Fremantle's request, and strongly recommended for adoption by Sir John Burgoyne.

In that paper it was also suggested that the residue of the cost peculiar to the navigation part of these great measures should be secured by the counties immediately benefited. On this subject it only remains to be suggested that the Drainage Act be so far altered as to admit, in such cases, of the surplus tolls being applied to reimburse the counties contributing. This important point can be more fully explained if required.

ASSISTANCE requisite, without travelling out of the Provisions of the existing Acts, to prepare for early Work the first 25 Districts referred to in this Paper:

Firstly. Apart from the question of aid to navigation just adverted to, and involved in three of the largest of these districts, it is essential that immediate and vigorous exertions be made to complete all the preliminary proceedings required by the Acts in these cases, and for this purpose to employ forthwith additional engineering assistants, draftsmen, &c.

The balance of funds provided by the applicants in each of these cases at present in our hands is wholly insufficient for this purpose, whilst the Act provides ample security for the recovery of any expenditure (in addition to the deposits) in these preliminaries: in the case of the works being proceeded with, *out of the funds for the whole district;* in the case of their not being proceeded with, from the applicants. See the 39th section of the Act 5 & 6 Vict. cap. 89.

To wait until the requisite additional funds should be subscribed in detail by the parties interested, who are very numerous in each case, many non-resident, and many too apathetic to advance money, however willing they may be to assent to the measures when the preliminaries are completed, would involve the loss of several months, and in many cases prevent the commencement of the works next season.

Until the preliminary steps are completed, the Board cannot compel, by any legal measures, the applicants to provide more funds than those first deposited, unless by adopting the very ungracious, and, in the present state of things, inadmissible course of suspending the inquiries until further funds are provided; besides, it is contended, and with apparent reason in many instances, that the additional funds are not due until the preliminaries are completed.

All these difficulties in the present cases and future ordinary working of the Act may be removed if the Treasury will sanction the adoption of the following arrangement:

The Board has always a sufficient floating balance in bank which would enable them to pay these expenses; and it is submitted whether the 88th section of the Drainage Act, 5 & 6 Vict. c. 89, which makes one account of all monies placed in bank, and directs the application thereof in general terms, empowers the Board to do so; but to obviate any question on this head, and to meet any contingency arising from delay in the recovery of

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preliminary expenses, to replace any monies so applied, if the Treasury will guarantee a loan to this Board not to exceed at any time (for the present say) 3,000 *l.*, to be repaid with interest, to be levied off the respective cases requiring the outlay, the difficulty will be overcome; whilst very probably this loan fund will be seldom, if ever, drawn upon.

Secondly. In addition to this matter of preliminary inquiries, and in order to meet the exigencies of the ensuing season, it is indispensable that an ample supply of tools for the employment of the men in these districts be forthwith prepared and stored, as, owing to the pressure from railway and other works, it would be impossible to procure them in sufficient quantities, and in sufficient time after the preliminary proceedings in these cases were completed.

For these purposes there are no funds at the disposal of the Board, nor in the ordinary course can there be any until after the completion of the preliminaries, in each case, and a loan for the requisite funds shall have been obtained.

The only practicable course in this matter seems to be the advance of funds by the Treasury, to be afterwards secured with interest under the provisions of the Act upon the districts to which the tools shall be drafted, the certificates of loan under the Act not being issued until the allocation of the tools had taken place, and then to pay any interest accruing between the date of the loan and the issue of the certificate.

For this service in these 25 districts it is probable a sum of 10,000 *l.* would be requisite before the Board would be in a position to effect loans with other parties, as the tools at present in the possession of the Drainage Commissioners would probably not suffice to employ more than 1,500 men.

Thirdly. For the ordinary working of the Act, with the increased business which is now annually arising, it is essential that an increase in the permanent establishment of the Board be made without delay, as suggested in Mr. Mulvany's memorandum of the 5th instant, in order that the whole of the operations may be got into system, and proper records kept of the proceedings. But, in addition to this, and to carry into effect even the works referred to in the Table in the first part of this paper, it is probable the assistance of an active staff from some other department will be requisite, and certainly so if a new Act be passed such as is suggested.

ASSISTANCE which will be requisite, with Legislative Measures, to prepare for Work next Season the last 18 Districts referred to in this Paper, and others, for which Memorials under the Act are now being, or may be presented.

As in the former class of cases:

Firstly, The temporary use of funds, secured as before mentioned, to forward immediately, to such a stage as *any such new Act* shall fix as necessary, the preliminary proceedings in these cases, probably taken in conjunction with the private funds that may be provided in these cases; and, under our views of what would be requisite in the provisions of a new Act, 4,000 *l.* or 5,000 *l.* would suffice for this purpose.

Secondly, The temporary use of funds, secured as before mentioned, to provide tools: in the uncertainty as to the number and amount of cases which may be proceeded with under this class, it is difficult to estimate the sum requisite; it probably, however, would not exceed that stated in the former class of cases, viz., 1,000 *l.*: and,

Thirdly, The assistance, at a very early period, of a staff of office assistance, if possible belonging to some existing department, and trained to the class of business which the Board would require.

The alterations which might be reasonably suggested to be made in the law, to allow of these and other drainage works being commenced without delay, properly forms the subject of a separate paper, annexed hereto; but it may be generally stated that the temporary provision of funds for the preliminary inquiries will greatly smoothen and facilitate the operation of the present law; whilst the most tedious part of the preliminary surveys, namely, the detailed valuation of the land and minute survey of the territorial divisions may, by the passing of certain enactments, be safely postponed until the works have been commenced, without altering the leading principles of the Act, except as regards a modification of the security. And further, that now, when the operations of the law and its beneficial effects are becoming more fully appreciated than when it was first proposed, the lengthened periods required for the lodgment of plans, the numerous notices, and other formalities then required, may most usefully be lessened.

(signed) WM. T. MULVANY,
Comm. Drainage.

17 Nov. 1845.

Paper,

Paper, No. 1.

No. in Printed Report.	DISTRICTS.	COUNTIES.	Length in Miles.	Extent of Land to be Drained.	Balance not yet Expended, 7 Nov. 1845.	Total Estimated Cost.
	Works in Progress:			*Acres.*	£. s. d.	£. s. d.
1	Blackwater River	Meath and Kildare	18	3,851	2,335 3 9	10,000 – –
2	Ardee, River Dee	Meath and Louth	17 ½	3,240	1,051 2 2	8,388 – –
3	Borrisokane	Tipperary	11 ¾	1,206	402 12 10	3,486 2 8
4	Oranhill, Turloughs	Galway	8 ¾	974	795 15 6	2,400 – –
5	Cahore	Wexford	4 ¼	598	2,251 8 7	3,100 – –
6	Kilmannock	Wexford	–	498	4,682 17 11	6,087 – –
6		Total	60 ¼	10,367	11,519 – 9	33,461 2 8

Paper, No. 2.

No. in Printed Report.	DISTRICTS.	COUNTIES.	Length in Miles.	Extent of Land to be Drained.	Total Estimated Cost.	Amount that could be Expended next Year.
				Acres.	£. s. d.	£. s. d.
	Works for which Meetings have been held, Assents nearly complete, and which may be proceeded with next Season:					
9	Strokestown	Roscommon	45 ¼	7,397	17,996 7 –	9,000 – –
30	Fane	Louth	6 ½	1,449	6,002 – –	6,000 – –
4	Templemore	Tipperary	12 ¼	3,448	7,224 14 10	6,000 – –
5	Ballyteige (suspended by Admiralty).	Wexford	11 ¼	2,921	18,000 – –	10,000 – –
14	Glyde and Lagan	Louth, Meath, Monaghan, and Cavan.	43 11/12	6,887	19,896 5 8	10,000 – –
21	Borris in Ossory	Tipperary and Queen's	14 ½	3,232	6,896 – –	5,000 – –
22	Upper Boyne	Westmeath, Meath, Kildare, and King's County.	54	7,059	25,706 11 10	10,000 – –
7		Total	187 5/12	32,393	101,721 19 4	56,000 –
	Works nearly ready for holding Meetings, and likely to proceed:					
12	The Loughans	Kilkenny	4 ⅛	580	1,403 12 –	1,400 – –
13	Sow River	Wexford	9 ¾	1,738	5,194 – –	5,000 – –
24	The Main	Antrim	11	1,875	8,937 18 –	8,900 – –
38	The Carrigans	Donegal	5	500	1,700 – –	1,700 –
43	River Deel	Westmeath and Meath.	12	say 3,000	7,000 – –	7,000 –
5		Total	41 ⅞	7,693	24,235 10 –	24,000 – –
	Works for which all Preliminaries are complete, but for which Parties decline to assent:					
28	The Roe	Derry	11 ½	2,863	17,034 – –	7,000 – –

Paper, No 3.

No. in Printed Report.	DISTRICTS.	COUNTIES.	Length in Miles.	Extent of Land to be Drained.	Total Estimated Cost.	Amount that could be Expended next Year.
				Acres.	£. s. d.	£. s. d.
	DRAINAGE MEASURES, Inquiries for which are in an advanced state, and which, if Assistance be given, could be prepared for Work next Season:					
15	Brusna (Clara) - -	- - Westmeath and King's.	20	4,086	7,438 - -	6,000 - -
27	Brusna (Ferbane) -	Ditto - - ditto -	71 ¾	about 12,000	38,000 - -	10,000 - -
20	Loughs Corrib, Mask, and Carra.	Galway - - -	53 ¼	17,000	90,500 - -	20,000 - -
23	Ballinamore and Junction Navigation.	- - Leitrim, Cavan, and Fermanagh.	40	6,157	110,000 - -	30,000 - -
25	Lough Neagh and Tributaries.	- - Antrim, Derry, Tyrone, Down, and Armagh.	91 ¾	25,000	157,000 - -	50,000 - -
39	Bay of Tralee - -	Kerry - - -	3	1,400	15,014 - -	10,000 - -
17	Camlin - - -	Longford - -	25	4,473	14,288 - -	8,000 - -
7		TOTAL - - -	304 ¾	70,116	432,240 - -	134,000 - -
	MEASURES for which first preliminary steps have been, or are being taken, and which, if assisted, and the necessary assent of Proprietors could be procured, might be commenced next Summer, if some of the Preliminaries of the Act were dispensed with:					
2	Turloughmore - -	Galway - - -	23	5,521	25,697 - -	10,000 - -
10	Feigh, River Lung -	- - Roscommon and Mayo.	10 ¾	2,512	6,621 - -	5,000 - -
19	Dodder Reservoir -	Dublin - - -	14	185	30,000 - -	10,000 - -
29	Camoge - - -	Limerick - -	6	1,106	2,850 - -	2,800 - -
36	Lady's Island Lake -	Wexford - -	3	1,000	say 4,000 - -	3,000 - -
42	Lough's Oughter and Gowna and River Erne.	- - Cavan (Navigation and Drainage).	25	say 5,000	say 25,000 - -	10,000 - -
6		TOTAL - - -	81	15,139	96,168 - -	40,800 - -

Paper,

Paper, No. 4.

No. in Printed Report.	DISTRICTS.	COUNTIES.	Length in Miles.	Extent of Land to be Drained.	Total Estimated Cost.	Amount that could be Expended next Year.
				Acres.	£. s. d.	£. s. d.
	DRAINAGE MEASURES for which Applications have been received, but no further steps taken by Parties applying.					
26	Bann Bridge - -	Down - - -	about 2	about 100	—	—
31	Kilbride River - -	- Kilkenny and Tipperary.	5	2,500	—	—
32	Bogs of Poulerissane and Derrylissane, near Monivea.	Galway - - -	3	1,230	—	—
33	The Fergus, &c. - -	Clare - - -	20	3,647	—	—
34	The Eslin River - -	Leitrim - - -	13 ¼	1,000	—	—
35	The River Rinn - -	Ditto - - -	12	1,800	—	—
37	Tacumshin Lake -	Wexford - -	A private Act obtained for this district.			—
40	Castle Shane - -	Monaghan - -	2	350	—	—
41	Scariff - - - -	Clare - - -	8	1,500	—	—
44	Rivers Kilcrow and Ardullagh.	Galway - - -	15	2,000	—	—
45	Nobber, Dee Extension	Meath - - -	11	550	—	—
11			91 ¼	say 15,000	say, at 3*l.* per Acre, 45,000 - -	say 30,000 - -

The Witness.] The changes were twofold in the law. One was a change in the ordinary proceedings, pressed by the gentry of the county at the time. That is partly developed in the first part of the paper which I have read, and is more fully developed in that second paper. Then there was the alternative of a summary mode of giving employment by relief at once, and that is contained in the second part of the first paper which I read, and in this paper which I am about to read.

MEMORANDA for Act for Employment of Labouring Classes in Ireland.

It appears to be deserving of consideration whether, in the event of great distress arising in Ireland, from the failure of the potato crop, it may not be necessary to provide, by means of one short Act of Parliament, summary powers to proceed with various useful works in different parts of the country, in order to afford remunerative employment for the labouring classes. The alterations proposed in the General Drainage Act, though essential to its more expeditious working, would still in a great number of new cases (where the surveys are not yet commenced, or cases not yet brought forward,) leave that Act quite too slow in its operation to meet such a contingency as is here adverted to; indeed it would be impracticable for this Board to obtain in time the necessary engineering surveys and professional assistance which would still under the amended Act be requisite.

It may be observed, that even under its operation the time required in moderate sized districts would be from three to six months.

As observed in the paper of the 17th November instant, there are throughout the country a great number of simple cases of drainage where the works of mere labour may be proceeded with at once *without any detailed surveys,* but *simply, with the aid of the Ordnance maps, to determine approximately the extent of lands to be drained,* and with the experience now obtained in other cases, to estimate with the aid of the said maps *the cost per mile of the requisite excavations,* and the increased value. Engineers experienced in these operations would within a week, in a district of even considerable extent, prepare sufficient information to enable the Board to judge of the propriety of proceeding with works that would *certainly be useful, or a necessary part of what would finally be required.*

The Witness.] This is the construction and project of these summary proceedings, to afford employment by relief at once.

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Two weeks more should, in my opinion, suffice for any other proceedings, so that employment might be given in three weeks after it was sought for; and if an Act for such a purpose were passed at a sufficiently early period, and its provisions known throughout the country, it could only be the fault of the locality itself if the district were not prepared for work in sufficient time.

Although it is proposed that the powers to be given by any such summary Act should only be brought into operation on the written application of the proprietors of any quantity exceeding half the lands to be drained or improved, yet to prevent well-founded objections to summary proceedings, it will be requisite to limit the operation of the Act, as regards the power to commence such works, to one year, and also limit the expenditure under the Act to some average sum per statute acre, say 3*l.*; that is, that on a district of 1,000 acres, not more than 3,000*l.* shall be expended under the powers of this Act to be granted.

As in many cases it may not be practicable to complete all the works essential in such a district for the limited sum, provision should be made for their completion under the provisions of the General Drainage Act, when the preliminaries referred to shall have been completed. With a view to avert the distress which may result from a deficient crop, it appears to be of great importance that as much employment as possible be given before the great want of food is felt. Thus it would be very important to give a good deal of employment before the period of sowing the crops, then to allow the agricultural labourers to attend to the crops, employing only such as would not be required for that purpose to prepare the districts, by the cutting of top drains and other works, for the employment of large masses of the people in May, June, July, and August.

The provisions which will be requisite in such an Act as is here proposed, so far as regards drainage, may be few and simple, and may be briefly described as follows:

First: After reciting the causes which render such a course of legislation necessary, provide that upon the application by memorial of the proprietors (as defined in Drainage Act) of any quantity exceeding half the extent of the lands to be drained or improved, the Commissioners of Drainage shall cause such examination or preliminary inquiry as they shall deem fit to be made, or examine and adopt any which shall have been heretofore made by some competent engineer or surveyor, and cause to be ascertained in a summary way the extent of the lands to be drained or improved, the probable cost thereof, and the probable benefit to result from such drainage, together with the names of the reputed proprietors of the lands to be drained; and if upon the report of such engineer or surveyor it shall appear, to the satisfaction of the said Commissioners, that the benefit to result would be commensurate with the amount to be expended in all the works and incidental expenses connected therewith, they shall cause a copy or copies of such Report, with their opinion thereon, to be lodged in or near such district, for public inspection, for two weeks, and cause notice thereof to be given in any newspaper circulating in the district, and to be posted in the usual places for posting grand jury notices in said district, and otherwise as they may think fit.

Secondly: Provide that in and by such notice all proprietors of such lands shall be called upon to furnish, either by themselves or their known agents, to the Commissioners, at their office in Dublin, or to some person authorised by the Commissioners, their assent or dissent to the proposed measure, on or before a day to be named in such notice, not less than three weeks from the date of the lodgment of such report; and if at the expiration of such period, or at any subsequent time within 12 months from the passing of this Act, the Commissioners shall find that the assent of the proprietors of more than half in extent of the lands to be drained shall have been given to the proposed works, they shall publish final notice, stating that all preliminaries required by this Act have been complied with; after which no appeal, nor no error to invalidate proceedings.

Thirdly: Provide that after publication of such final notice, all the powers, provisions, and authorities of the General Drainage Act, and Acts to amend same, shall be applicable for borrowing money, the execution of the necessary works, and all other proceedings whatsoever: provided always, that in any case of works undertaken under the provisions of that Act that no amount in the whole exceeding on the average 3*l.* per acre shall be expended until and unless all the preliminary proceedings which are now or shall hereafter be required under the provisions of the General Drainage Act shall have been taken, and the assents thereby required obtained.

Fourthly: Provide that all monies expended under the provisions of this Act shall be charged and applotted and recovered in the same manner as by said Act or the proposed amendment thereof is provided.

Fifthly: Empower the Commissioners of the Treasury to make temporary advances by way of imprest monies, not exceeding at any one time 10,000*l.*, to be repaid out of the loans for each work respectively, to the Commissioners of Drainage, for the purpose of prosecuting preliminary inquiries, and providing supplies of tools and other materials for the early prosecution of such works.

Sixthly: Provide that no work under the provisions of this Act shall be commenced after the expiration of twelve months from the passing.

Dated 24 November 1845. (signed) W. T. M.

The

The letter from the Chairman of the Board, with which that paper was sent, is as follows:— *W. T. Mulvany, Esq.*

I beg leave to send for your consideration the accompanying paper, which contains suggestions with a view to early employment of the people in the spring, and if the present Drainage Act should be amended, it will be desirable to add the present proposals, to be acted on only during the distress, but as there are so many references to the General Drainage Act, it will be advisable to make them form part of the same Acts. 18th June 1852.

(signed) HANRY D. JONES.

To Sir Thos. Fremantle, Bart.

The reason why I show your Lordships these papers, is that 98,000 acres of the whole that we have under operation, are drained under the ordinary proceedings, and 238,000 acres were brought under the operation of those very summary proceedings, in 103 districts.

744. Of that latter number, were there any works for which surveys were made, and all the preparations made, with a view to ordinary proceedings, and which were only undertaken under the Summary Act, after every other preparation had been made?

Yes. There was certainly one in which the surveys were made; there were none, that I recollect, in which all the preliminaries are completed. There were several in which a mere cursory survey and report (the first survey prescribed by the first Act and a preliminary report) had been made, such as Turlough More and Kilbeggan, and some others. Of those in which the survey had been made and the valuation made, for instance, one was the Brusna.

745. Kilbeggan was in 1844?

Yes; a mere preliminary report had been made; that was lodged, and not a detailed plan; and then, when the pressure came, that preliminary plan was adopted, without the detailed survey which would be required under ordinary proceedings. Then, such being the frame of the Summary Proceedings Act, I proceed to show to your Lordships that it was adopted by the country for the purposes for which it was proposed, and which are distinctly explained by the words of the Act itself, and the preamble of the clauses relating to summary proceedings. It will be too much to trouble your Lordships with the letters, though I could very much wish that you could read them; nor have we been able to search our official documents in Dublin at all, to the extent that would be requisite to bring that point before your Lordships; indeed it would occupy some months to search the mass of letters in our office.

746. What is the purport of the letters?

The letters are pressing that we shall make the Drainage Act available for the employment of the people for relief. We have letters from the Marquises of Westmeath, Sligo, Ormond (by his agent), Abercorn, and Hereford; the Earls of Erne and Lucan; one from the Chairman of this Committee, that might bear upon the subject; the Earls of Devon, Darnley (by his agent), Bessborough, Courtoun, Shannon (by his agent), Gosford, and Clanwilliam; Lords Crofton, Monteagle, Farnham, Clements, Bernard, Southwell, Wallscourt, Lurgan, and Newry; from the Honourable Mr. King, and a great number of Members of Parliament, with whose names I need not trouble your Lordships; from several Relief Committees; the Grand Juries of Cork and Louth; Presentment Sessions; the Guardians of Unions; Deputy Lieutenants and Magistrates of Mayo, at the time that they desired to have food and employment on drainage and railway works, instead of the useless works, as they were called; and from a great number of the proprietors. These letters and documents are in London, but here is a list of the parties.

747. What is the effect of those letters?

I will state the effect, without troubling your Lordships with the letters. The following is the nature of letters or applications from proprietors, pressing on the Board of Works for employment as a means of relief, under the Arterial Drainage Act: That the proprietors themselves, being the parties to repay the cost, demand works to afford employment: they urge on works even where floods are out on the lands; that we should find other works for the people to do, instead of working in the bed of the river: that

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the people are starving, and should be employed on reproductive works, and so supersede unproductive works; that the relief works are stopped, and people must be employed on the rivers, as they are in a state of starvation: to prevent the payment of two sets of rates, for useless and reproductive works: and the parties writing this (Mr. Strickland and Mr. Holmes are the gentlemen), state they represent nearly the whole properties in the district. To prevent the able-bodied from going to food depôts, and being fed in idleness: the importance of employing them on drainage works cannot be overstated: all the gentry are anxious for the opening of the rivers. Lord Erne, and a number of parties in the north of Ireland, urged this. "From the failure of the potato crop, and the starvation of the people, that Government should provide food and reproductive employment by drainage and railway works for them;" that was from the Mayo Committee. When proprietors were told of the consequences of making the drainage relief works, they said, "it was their money which was being expended, and they preferred to have it laid out in improving their properties rather than in useless works or out-door relief." And they said also that "it may be well to bear that in mind, but we must save the lives of the people." The Board instructed their engineers to commence proceedings on the 22d December 1846, in the winter, in all parts of the Rinn and Blackriver district, in the county of Leitrim, where work could be done, "as great distress was represented to exist near Cloon, Blackriver," and so forth. Then it was stated that numbers must perish unless two districts, the Lisclogher and Athboy drainages were set on. We were frequently told of threatened outbreaks of the people if we did not go on; in some cases the proprietors were stated not to be safe in their houses; in some cases they were actually besieged therein; actual outbreaks did take place in several instances. The parties urged on the commencement of upper works before the lower works to relieve their lands and tenants in different parts of districts, so that the men might have dinners at home, they were so weakly. Then others urged to keep the tenants and labourers on the lands, who would otherwise desert them, and thus prevent the proprietors from availing themselves of facilities for drainage for want of labour. It was represented by Lord Devon that the want of proper powers in the Million Act prevented private works, and threw proprietors on the provisions of the Drainage Act. It was stated by another party that the proprietors could not employ the people in thorough draining without the lowering of the main conduits, nor open small rivers as large rivers were not opened. The ordinary drainages were also pressed into the service for employment. In the Strokestown drainage we had pressure from Mr. Irwin, a proprietor, and Mr. Brown, and the magistrates of Strokestown. In the Glyde, we had Mr. Morant, the agent for the Great Shirley estates, Mr. Lee Norman, with the Grand Jury of Louth, pressing for it, and various other parties whose names are not here. In the Templemore, we had Sir Henry Carden and others pressing for it in the same way. In the Loughans, we had the same from the Rev. Mr. Lodge and others. In the Borrisokane, Mr. Falkner and others. In the Ballytiege, a memorial of proprietors to the Commissioners of Woods and Forests. In Borris-in-Ossory, Mr. Smith. In the Boyne, the Guardians of the Edendery Union. In the Lough Neagh, the papers of which I have here, we had a memorial from the two primates, two bishops, two deans, seven noblemen, and 76 deputy-lieutenants and magistrates, pressing that the Great Lough Neagh works should be made instrumental to affording relief by employment to the people, whose condition it would be frightful to contemplate unless "industrial measures of this sort are adopted." Then as regards bringing cases commenced under provisions for ordinary proceedings under those for summary proceedings. The Kilbeggan was pressed for by Sir William Leeson and other proprietors; by Mr. Garvey, I remember, the agent for Lady Norbury. The Brusna was pressed for by Lord Digby and others; but I have special remarks to make upon that subject. The Rinn and Eslin, by Lord Leitrim. The Killinor, by Mr. Reynolds and others. The Ballinamore and Ballyconnel. The Great Junction Canal across the county of Leitrim, pressed by the proprietors. The Longford and the Fergus. Those are cases in which cursory surveys and preliminary reports had been made or were in progress. In the Brusna case, we had, as your Lordships are aware from the correspondence, surveys made much more in detail.

748. In these letters which we have not seen, do the parties press you to carry on the large works to a disadvantage. Do they write under the conviction that there will be nothing approaching to the worth of the money obtained from labour under such circumstances?

In several cases they distinctly admit the fact of increased cost, and repeatedly deputations and individuals have come to us, and we have told them of the consequences.

749. Out of 50 letters, in how many cases do the writers of the letters anticipate that they will be experiencing heavy pecuniary loss in urging you to carry on the works?

I cannot tell how many cases, but I know there are cases in which they knew there would be increased expense; and I should very much wish that the whole of this correspondence should be before the Committee. It is a very large correspondence. I will read one or two letters which I have in reference to the Brusna case itself, and your Lordships will judge from their nature.

750. Are these names which you have given to the Committee the names of applicants as memorialists?

No, they are special letters, often from the same parties, the promoters.

751. They are all special letters?

They are, or memorials, not under the Drainage Acts.

752. And you can put your hand upon those letters?

I have them in London; they are special letters to myself or to the engineers, or to the office directly.

753. Were these special letters for the purpose of pressing any particular drainage, or were these letters for the purpose of condemning the waste of labour under the Labour Rate Act?

They frequently did condemn the Labour Rate Act and the roads in the strongest manner; they urged that these drainages should go on. We felt that nothing could be more creditable to the parties than that they desired that any expenditure which should take place should take place upon useful works; and therefore, though we refused some cases, we did everything in our power to press forward these works, so as to comply with the wishes of the proprietors; and that their money should be spent, so far as it went, in a way that would improve their properties.

754. Then the object of these parties was, more to be relieved from the public-labour rate than it was for the purpose of pressing any particular drainage?

No, they always alluded to some particular drainage, and they seemed to have both objects in view; and also they wanted to avoid the feeding the people in idleness.

755. Were you satisfied, from the evidence that you had, that with respect to these large drainage works, the majority of the proprietors, or rather the proprietors representing the majority of acres, were prepared to make the sacrifice of carrying on the works to a great disadvantage?

In a great many instances I do not think they considered the question of sacrifice at all; they did not entertain it. The whole pressure was to go on; they said, "Go on and save us from this useless expenditure, and let whatever is done be done as part and parcel of what will ultimately be useful." That seemed the leading spirit, and it always struck us as so highly honourable a spirit on the part of the proprietors, that we endeavoured in every case to meet them; and I can scarcely convey to your Lordships the amount of labour that was personally gone through by every individual connected with the Board to meet those views at the time.

756. But is it your impression that parties representing the majority of acres generally felt that strong desire to carry on the works to a great pecuniary sacrifice on their part?

I have no fixed impression on my mind as to whether they were a majority or not; the pressure was tremendous, and I think your Lordships will see, from some of the few letters which I will read, for instance, connected with a district with which the noble Chairman is more familiar, how fearful we were that it was

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leading to bad consequences, and how we put on every screw to prevents its growing too wild.

757. With respect to the Brusna case which you have mentioned, we have the correspondence, and therefore we have something to go upon. There we observe that the committee of proprietors point blank contradict the statement; they say that, as far as they are aware, they have not been able to ascertain that in any instance the Board of Works was urged to carry on works to a disadvantage at an unseasonable time, or even pressed at all; that is what they say, and there is an answer of the Board to it?

And there is a letter addressed to our engineer, showing the pressure.

758. This is the observation of the committee of proprietors upon the statement of the Board of Works; the statement of the Board of Works is, in a few words, that the works were carried on at a loss, being carried on as relief works. The proprietors say, "Certain portions of the works could be executed as well in winter as summer. We have made inquiries, and have been unable to ascertain that any of the proprietors pressed them to carry on the drainage works at an unreasonable time, or pressed them at all." This is the answer of the Board: "The pressure referred to is publicly and well known; the very provisions of the Act under which the work was undertaken were expressly framed to meet this pressure, and afford relief from distress, by employment; and the records of the Board show that several of the parties interested in this very district were in frequent communication with the Commissioners, urging them to proceed with the works, not merely for the benefit which the works would confer by drainage, but distinctly for the benefit which the employment would yield (as, for instance, see following copy of letter of instructions to the engineer, dated 17th September 1846); and even in the year 1850, the engineer states that paupers were sent out of the poorhouses at Parsonstown and Tullamore to be employed on the works." This is the letter to the engineer: "Brusna District, Office of Public Works, 17th September, 1846. Sir,—The Commissioners of Public Works being called upon to afford as much employment as possible in the above district, I am to request that you will report how far it may be practicable to set parties to work on the Cloughhatanny and Ballyboughlia tributaries and the Silver River, if found to be required. You will also state your opinion as to which of these works require most to be proceeded with at present, to afford employment as relief, observing in all cases to comply strictly with the last circular as to the special work to be performed and the persons to be employed"?

This is a map of the district itself, and I take the liberty of laying it before your Lordships.

759. Here the committee of proprietors say, that as far as they have been able to ascertain, not only the majority of the proprietors did not request that the work should be carried on to a disadvantage, or at all, but that they have not been able to ascertain that the Board were pressed by any one?

I have prepared the information for your Lordships on that subject. Here is a list of the letters from proprietors and parties pressing, in reference to the Brusna case, and here are some of the other documents on the subject. In the first instance, the late Earl of Charleville, as I dare say your Lordships are aware, promoted this measure in the year 1844. Here is an extract from his speech, which was reported at the time. In that speech he advocated it as a means of employment—(that was before the famine)—of course a just means. He said, "It would afford great employment in the first instance to the labourer, and in the second, it would secure to him, in the cultivation of this increased breadth of land, the source of more certain and extended employment hereafter. It would afford means for providing for and allocating many families, and supplying many families with land, and the means of subsistence and employment, who are now unemployed and languishing in misery and destitution. I have always been of opinion that many of those evils of which we all, of whatever rank or degree, or opinion, most justly complain, are attributable far more to the misfortunes of our social state, though they are taken advantage of, and may be aggravated by political and other causes. Here is an opportunity afforded to you to remedy some of the evils of our social state. Oh! do not neglect it, for your own interest goes along with your duty; accept this proposal, and both

landlord

landlord and tenant will have greater returns from the land. Remember the proverb, 'that money makes money;' increased production will create an increased demand for labour, and will enable all classes of labourers to live more comfortably." This merely showed that Lord Charleville considered the measure would be useful for that purpose, which it unquestionably was. There was a committee then appointed by the proprietors at that meeting at Ballycumber, and that committee was in constant communication with us. The papers are here.

760. You are travelling a good deal from the actual point; the Board and the committee of proprietors are at distinct issue, and we wish to see who is right?

I show the Committee that in the very origin of the thing Lord Charleville promoted it (amongst other objects) as a measure of employment. Subsequently, when we had proceeded with it in the ordinary way, the committee of proprietors (this I give your Lordships as evidence) urged us to take it up under the Summary Proceedings. The Rev. Skelton Gresson wrote to us on the 6th of April 1845, urging the completion of the surveys and so forth, and his anxiety arose from the wish to give employment to the lower orders. Sir William Leeson, referring to another portion of the Brusna, the Kilbeggan District, applies to have it proceeded with under the Summary Proceedings Act, and gives a list of the proprietors then anxious for further proceedings. Mr. O'Hanagan inquires, on behalf of the manager of Lord Digby's estate, if the Brusna is likely to be drained, as he is anxious to afford employment. This was on the 28th of March 1846. He was replied to on the 1st of April 1846, that the necessary steps were being taken under the provisions for summary proceedings. Mr. Garvey applied for the Kilbeggan for the sake of employing the distressed labourers. Sir Nicholas FitzSimon wrote, stating that Count Magawly was at Parma, but that his tenants were most anxious for the commencement of the works. Then your Lordship read the letter to Mr. Fitzgerald, the engineer, which shows that the Board were pressed upon the subject when they wrote such instructions to the engineer.

761. But the question is whether the Board had evidence before them that it was the wish of the majority of the proprietors that a pecuniary sacrifice should be made by carrying on the works, when it could not be carried on at a reasonable advantage?

Perhaps I had better read some of the letters.

762. If they bear upon the point?

Here is one from Mr. John O'Brien, of Rohan, whom I suppose your Lordship knows. "23d September 1846. Gentlemen,—I cannot convey to you the intense disappointment that is experienced in this locality on the part of the poor labourers at the promise held out to them yesterday of their being employed at the long expected work of the drainage this day. God grant it may not excite the unfortunate half-starved beings to rapine and outrage. The reason assigned for the postponement of the work, the untoward want of implements, bespeaks great inattention in some quarter. As it is generally only at head-quarters that redress is obtainable, I am induced to address you to have the requisite implements despatched; at the same time not intending, in any manner, to censure the respectable gentlemen employed by you, and who appear well calculated to execute the important business entrusted to them with all due efficiency. I lament the present appearance of the weather indicates that little benefit can be derived from drainage this year. I am, respectfully, gentlemen, your most obedient servant, John O'Brien. Ten men were employed yesterday, loch-sodding."

763. In that letter there is no expression of willingness to abide by a pecuniary sacrifice to carry on the work at that time?

No; but it shows the pressure brought upon us to employ the people at a most improper place, Rahan, before the works had gone on in their ordinary way from the lower part of the district upwards, Rahan is, as your Lordship is very well aware, a little below Tullamore. Then Mr. Fitzgerald reported thereon.

764. We do not attach the least importance to this case over any other case, further than that the correspondence is before us, and we wish to test it. There

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is no doubt that, in the smaller cases particularly, they were carried on for the purpose of affording relief, and with the assent of the parties. The strong objection made is that that should be alleged as an excuse for cost greatly exceeding the estimates with respect to these large works, which are like great railway works; that they were carried on, to a certain extent, as relief works, and the parties interested say that the Board had no more authority for carrying them on as relief works at a great loss than railway directors would have authority to carry on a work as a relief work at a great loss to the shareholders?

Upon that subject I beg to refer your Lordships to the circulars; they are very extensive, but I have brought them to be laid before your Lordships; they are the circulars of instructions to our engineers. The Act provides that the works brought under the summary proceedings should be available for relief; the preamble and the clause goes distinctly to that extent. We endeavoured, then, to steer a middle course. It is very fully developed in these circulars to our engineers. We warned them to have no connexion with relief committees, but to take the best men they could; but still that they were to make the works, as far as they possibly could, conducive to the employment of the people, and to relief by employment; and we directed them, as shown in that very correspondence, upon the pressure of parties, themselves to open different parts of the works, which were opened at a very great disadvantage, but which were necessary, for instance, in such an extent of district as that, to diffuse the employment through the county.

765. The general nature of the complaint seems to be that the Board, as it were, take credit for the loss upon these large works, in excusing themselves for the great excess over the estimates, but the proprietors generally seem not to think that any material loss was so sustained?

When we come to that question of excess of estimates, I shall be able to show your Lordships that the difference of cost was very considerable indeed consequent upon such a proceeding.

766. Would you wish to give any further explanation upon this particular case?

If your Lordships please. Amongst other things, the pressure was so great that our engineer for the Brusna district wrote to us, urging that the people should be paid by the week. I will just read the minute that was made at that time: "This will entail great additional expense, make accuracy of accounts most difficult, and is not essentially necessary when once the fortnightly system is properly established and regularly adhered to." These remarks refer to task-work. "Of course it is impossible to measure weekly. Then how is subsistence money to be vouched and accounted for? If the price of provisions were brought down to the natural standard by Government competition, there would be no necessity. Query, issue bone or metal tokens to men employed. Can any system for this be arranged?" This was a proposition to issue a sort of ticket whereby the parties could get the articles which they required. "Estimates will be exceeded, and control of accounts, I fear, hopelessly lost." That was the minute which we made, refusing in the first instance the pressure of the engineer to meet the distress of the time by paying weekly; but we were obliged to yield to it afterwards, and we did provide weekly payments, and the circulars and arrangements for that are amongst these papers.

767. As yet there is no letter which you have read that indicates that the party was aware that he was recommending a course which would involve him in more expense than would be his fair share as an inhabitant of the district to be relieved?

He was charging the whole district; he was desirous of relieving himself from the pressure of employment which was not giving him any return, and from paying taxes for food which would not give him any return, and he was desirous of taking in lieu of that whatever he could get in the shape of value for the employment of the people in reproductive works, because the parties were cognizant, as well as we were, that if we employed people in winter at opening rivers, if we began to open rivers in upper parts of the country before the lower parts were relieved, it would be injurious. Your Lordships confining the question so much to the point which you have mentioned, narrows it very much, of course. But we have inferred from the whole correspondence that they were cognizant of these

these circumstances which I have explained, and that they urged it to save themselves from worse.

768. We only confine ourselves to that one point because we have in that better means of testing the contradictory assertions on both sides, having what can be said by the parties interested on the one side, and what the Board of Works have said on the other?

There are documents here from our principal engineer, whom we sent down to superintend that work, and to see what arrangements were making for labour. I will not read them, as they do not meet your Lordship's question. The report of progress of Mr. M'Mahon shows the efforts which were making to employ the people on the district. The magistrates and cess-payers of the barony of Moycashel urged upon us in the strongest way the commencement of the Kilbeggan district, to give employment to the labouring poor.

769. I may say, as far as opinion is worth anything, that I think that the charge against the Board of Works of waste, where the question was a question of relief, is the weakest of all the charges; at the same time, as it has been specifically mentioned, it is right that it should be tested, as far as the Committee contest it?

We have a letter from the secretary of the Relief Committee, Mr. Galvin, complaining of delay in payments and commencement of works. Mr. Fitzgerald, in his first annual report, shows the efforts to relieve the distress. Mr. Wetherell, of Parsonstown, writes to advise the removal of obstructions in the Lesser Brusna, as applied for by Lord Rosse and others, so as to give an outfall for drainage of lands: I think he alludes to employment in that letter. Francis Berry urges on the works, to give employment to the starving poor.

770. Is he a proprietor in that district?

I do not know, but we find it amongst the papers; if there is any doubt about it, I will pass it over. I am not aware.

771. Did the Board of Works take any steps to ascertain the wishes of the actual majority, or did they merely go by the general tenor of the letters?

Before we commenced we had a committee of the proprietors themselves in constant communication with us, urging this forward, as a means of relief by employment, with Captain Telfourd as the most active head of it, to whom the proprietors afterwards passed a vote of thanks, and I believe presented a piece of plate for the exertions he made in getting this measure forward; and we were in constant communication with that gentleman, Mr. Skilton Gresson, Mr. O'Brien, Mr. Goodbody, and others, who were deputed by the proprietors to communicate with us, up to the commencement of the works.

772. Did that represent the majority?

I presume so; they were appointed by the proprietors.

773. That was previous to the commencement?

Yes.

774. The question put is with respect to the works being carried on as relief works?

They were carried on under that clause of the Act of Parliament which provides that they shall be deemed as relief works, and the assents signed by the proprietors recites the Act.

775. Did you take any means of ascertaining the concurrence of the proprietors?

We took no further means; we were carrying on in a hundred districts a great many relief measures, and we received every impression that was made upon us, like a piece of soft wax; but we took no active steps, of course. We were urged and pressed to the very extremity of endurance; every principle of our nature was worked upon by the proprietors to push forward the works, and to save the lives of the people. Here is a letter, dated 5th April 1847, from a Mr. Robinson, of Clara, who, I believe, is a proprietor on the lands: "I took this liberty on the 25th ultimo; may I beg thou wilt be so kind as to read it. Hundreds of our labouring poor about me are half starving; employment or food is their call, and can there be anything more reasonable? Please to order the river work on the Brusna to commence with spirit. Consider what immense employment can

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be found from Clara to Ferbane, a country now lying in a state of shameful waste. Ought I to petition the Lord Lieutenant?" Mr. M'Mahon, in his report to the Board, reports on the flooded state of the Kilbeggan district, weekly payments and implements, with a view to repayment. On the 17th of April 1847 R. H. Wetherell is compelled, by the disastrous state of the country, to implore the Board to expedite the Lesser Brusna drainage.

776. That refers to another work, does it not?

Yes. I allude to the whole neighbourhood; his letter was of the most pressing kind. Mr. Wetherell again complains on the 7th of June. Mr. Fitzgerald represents want of employment, and requests instructions to open works near Tullamore, and also on the Frankfort River. He was our engineer there, and those instructions were refused to him. I wish to bring that forward as a proof of our anxiety to control the pressure. Mr. Fitzgerald again reports the progress of the works during the month of September. I should like to call your Lordships' attention to that, because it is minuted on every point. This is the monthly report of the engineer; he reports the distress and the difficulties, and so forth; and the concluding minute made by myself on that report is, "I fear, from many observations in this report, that Mr. Fitzgerald is diffusing the work too much; on principle, there should not be more than one place of working on each river or tributary, and there the working parties should be consolidated; and as soon as the cutting had (with sufficient fall below it to unwater the works), reached the gradient level, the section should be taken out for the full depth and width, and in all but very bad sub-soils finished off as the works proceed, without pumping or scooping water." Now I show your Lordships the guardianship we endeavoured to exercise; but the pressure was so tremendous in the locality, in everything of the kind, that the engineer was frequently not able to comply with the instructions he received. We then had, in September 1849, a correspondence with the chairman of this Committee on the subject. His Lordship forwarded a communication from the millers in the neighbourhood of Birr, and they advocate the question of employment. His Lordship said that he began to feel rather different views on the subject than he had before about it, and did not exactly agree with his prior views; but he presses the matter again.

777. Is not that another work?

It is close to Birr, in the very neighbourhood, and the correspondence refers also to the Brusna Ferbane District; our reply is also given. Without troubling your Lordships with it, I should like to hand in this correspondence.

The Witness delivers in the same, which is as follows:

Castle, Parsonstown, 24 September 1849.

Sir,

The enclosed Memorial has been handed to me by Messrs. Palmer and Booth, Captain Davis, and the occupiers of Deirinduff, my tenants.

The Memorial was accompanied by an application to me as landlord for compensation for the injury done by the Board of Works; and certainly the principal memorialists have a claim arising out of the fact, that it was mainly owing to a desire expressed by me that they abstained from offering a strenuous opposition at the outset, when the consents were sought for. They were strongly under an impression that the works, even when completed, would, upon the whole, be injurious to their farms; but they were wholly unprepared, as certainly I was, for the suspension of the works in the state they at present are, and for the injury which has consequently resulted. As for myself, I felt interested in the works to this extent, that I thought they would be of public advantage, while I hoped they would not injure my tenants. Now, were I permitted to offer a suggestion, it would be that the Board should call upon their engineer to report upon the Memorial; and in the event of the statements in the Memorial being substantiated, I think the propriety of proceeding with the works, in preference to any other works not similarly circumstanced, could not be for a moment questioned; to the extent only, however, of replacing things in as good a state as they were before the Board commenced their operations. As to the Ferbane drainage referred to by the petitioners, from what I have heard I believe it is now carried on more economically, under a better staff than before, but I certainly do not feel that same anxiety as formerly about such work. Two advantages were expected from them: first, benefit to the landed proprietors; second, employment for labouring classes. First, if the lands were in England or Scotland, the drainage would be followed up by high farming, and very probably the anticipated benefits would be realized. Here, however, the State has so long suffered the continuance of a species of semi-anarchy, that a landed proprietor could not take the lands into his own hands and farm them, or oblige the occupier to

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to farm actively; and to the sleepy farmer, deprived of the crop of hay springing up spontaneously after the winter floods, the benefits of river drainage are very questionable. Second, as to the employment of the labouring classes, so little care has usually been taken to select the labourers, properly so called for such works; on the contrary, the farming classes having been to so great an extent employed, the land has been neglected, the temptation of ready money being too strong, and the landlord has been left no alternative but to eject. So great is the mischief which has arisen from the employment of the farming classes, instead of the labouring classes, in carrying out drainage works, that were it not that the memorialists no doubt contemplate the employment of the labouring classes, should the drainage at Syngefield be resumed, as they abound in that neighbourhood, I shall be disposed to differ from the memorialists as looking upon the employment which would be afforded as any real collateral benefit.

I have, &c.
(signed) Rosse.

KING'S COUNTY.

Castle Bernard Drainage District.

To the Commissioners of Public Works in Ireland.

We, the undersigned, proprietors of property and others interested in the above district, beg respectfully to call the earnest attention of your Board to the position in which we are placed by the protracted suspension of the above works.

You are aware that during a great portion of last year vigorous operations were carried on under you in a part of this district; about two miles of a new river was opened, and all preparations matured for building two weirs, and lowering the works of these mills: your local engineer appeared confident of being able to have these things done by the end of that season, and we must say, in justice to him, spared no exertions in endeavouring to accomplish that object, until suddenly he was ordered to stop all works, leaving thereby our properties in a most unfortunate position.

The head water of Springfield Mills is at a higher level than the large tract of land immediately up the river, which was formerly drained by an aqueduct under the river, which, in making your new channel was, of course, cut off, and in the interim the water carried to supply the mills between small temporary embankments for a long distance through our lands. These (or indeed hardly any) embankments could stand the floods here; and the result is, that a large quantity of our land is constantly immersed in water, and a large tract of our pasturage lands, &c. are from floods left worthless for a considerable portion of the year. See Statements annexed of losses incurred already by different parties.

We are very well aware that now, as your new river is made, and the old one filledup there is no remedy but to finish the weirs and mills, and lower the water, and we most earnestly call on your Board to take such steps to complete these works as will prevent further loss to us from this ruinous state of things.

Independent of the above consideration, we believe that this locality is justly entitled to your aid as a source of relief to the non-employed and starving labourers of this district. Indeed we have seen with surprise, that while these works are suspended, you have opened works this season at Ferbane, a part of this union, which is much better off than this division of it.

We most respectfully demand that your Board will take steps to proceed with these works, or at least to complete that part of them so far as the new river is made, before another season injures our properties. Your officer (Mr. Byrnes, C. E.) must be perfectly intimate with all these facts to which we have alluded, and we expect that (independent of the claims of our impoverished district, which this is), you will consider the propriety of executing such works here as may prevent the necessity on our part of ulterior proceedings.

Denomination of Lands Damaged.

Fostal - - - - - - -	John Davis, Dromoyle.
Derrinduff - - - - - - -	John Brereton, Parsonstown.
Fostal - - - - - - -	John Horan, Cree.
Boherbourg - - - - - - -	John Rutherford, Kingsborough.
Fostal - - - - - - -	Denis Heman, Costall.
Derrinduff - - - - - - -	Jos. L. Dillon.
Derrinduff - - - - - - -	Thomas Connor, Derrinduff.
Derrinduff - - - - - - -	Bridget Mathews.
Derrinduff - - - - - - -	Michael Cussen, Derrinduff.
Derrinduff and Clonoughill - - -	Palmer and Booth, Springfield Mills.

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SCHEDULE of LOSSES sustained by the different Proprietors.

John Davis, lost by flooding since commencement of works, 23*l.* per annum.

Denis Heenan, lost by flooding since commencement of works, 11*l.* 10*s.* per annum.

Thomas Connors, now John Horan, lost by flooding since commencement of works, 11*l.* 10*s.* per annum.

John Rutherford, lost by flooding since commencement of works, 10*l.* per annum.

John Brereton declines stating the amount of his damage.

Joseph Dillon, loss by flooding since commencement of works, 14*l.* per annum. Loss already sustained by flooding of green crops, grass, &c., 37*l.*

Thomas Connor's loss by flooding since commencement of works, 5*l.* per annum.

Mrs. Mathews, loss by flooding since commencement of works, 25*l.* per annum.

Michael Cassin, loss by flooding since commencement of works, 2*l.* 11*s.* per annum.

Palmer and Booth, loss of land continually covered with water, and other parts left useless by cuttings, &c., 10 acres, 16*l.* 10*s.* per annum. Damage to pasture land by soakage from drack drain, 10*l.* per annum. Loss sustained in 1848 by flooding of pasture, 15*l.*

The above damages of Palmer and Booth do not include their claims for losses sustained by them by the interruption of the working of their mills, by loss of water, &c.

Sir, Castle, Parsonstown, 7 March 1850.

I HAVE the honour to inform you that I have just received a letter from Mr. Palmer, one of my tenants, in which he states the fact that 30 acres of the best land in his farm have been rendered useless for a long time by inundations caused by the state in which the Board have left their works on the Camcor or Kinnitty River. That, in point of fact, the whole of that land has been waste for the last two years. I have had complaints from others of similar import.

I now beg to refer you to a letter I had the honour of writing to the Board on the 24th of last September, and to remind you that although the works pass through a portion of my land, I am not interested in the undertaking, as the lands to be drained are not mine.

In consequence of Mr. Palmer's complaint, I have directed my solicitor to take counsel's opinion, with the view of instituting proceedings against the Board, should he be so advised. I have also recommended the parties aggrieved to petition, with the view of bringing their case before the Legislature and the public, if for no other purpose, to warn others of the danger of admitting the Board upon their lands.

To me the conduct of the Board is perfectly inexplicable. Having proceeded just far enough to do the greatest amount of mischief to the lands on the lower reach of the river, by stopping up the old course without finishing the new, injuring at the same time the occupier on the upper division or reach, who, till the Board took possession of the river, were in the habit of protecting themselves by repairing the banks at a small annual cost, they suddenly stop short, as if they were in a state of bankruptcy. The mystery, however, does not end there. With a fickleness which does not usually characterise mature age, getting tired, as it were, of the Camcor drainage, they commenced *a new one in the same district*, part of which also passes through my land. If it is said the Camcor or Kinnitty drainage was abandoned because works were required in the south and west, why was the Blackwater commenced?

Having in the letter already referred to entered fully into the subject, I do not think it necessary to detain you by making any further statement, and have the honour to remain

Your obedient, humble Servant, &c.

(signed) ROSSE.

CASTLE BERNARD DISTRICT.

My Lord, Office of Public Works, 12 March 1850.

I HAVE the honour to acknowledge the receipt of your Lordship's letter of the 7th instant, and I am directed to express the Commissioners' regret that your Lordship should have deemed it necessary to address such a letter to their chairman.

The Commissioners have been fully cognizant of, and felt painfully the dangerous state in which the suspended works in this, as in some other drainage districts in Ireland, have been placed; and your Lordship will find by the last annual Report to Parliament, dated 9th May 1849 (a copy of which was no doubt sent to your Lordship), that the subject was fully brought under the notice of Parliament and the Government in pages 33, 34, and 35; and that this was especially the case with respect to the Castle Bernard District, the particulars of which were stated in pages 231, 232, 233, and 234.

It is believed that had your Lordship made inquiries of the proprietors, millowners, and other persons directly interested in the Castle Bernard District, you would find it to be notorious that the works of that district have been suspended solely from want of funds, a circumstance over which this Board had no control.

In the month of May last the Treasury issued instructions of the most strict kind, to the effect that, as regarded districts situate in what was therein defined as "non-distressed" parts of the country, no public loans would be made, except to the amount of private loans previously obtained; and although this was on several occasions explained to some of the parties interested in this district, the Commissioners received no loans, and consequently were not in a position to proceed with the works.

Mr. Commissioner Mulvany is under the impression that he explained to your Lordship

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on one occasion the want of funds for this district; and that your Lordship expressed your opinion of the facility with which loans could be obtained, if certain objections of lawyers could be removed.

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No doubt it does appear anomalous, without full explanation, that whilst the works are suspended in this important district, they are commenced and proceeded with vigorously in others not very distant; but this is easily explained, by stating that the Blackwater, for instance (to which your Lordship adverts), was deemed to be, and as it appears to the Commissioners properly so, situate in the distressed districts.

The Commissioners have had reason to believe from the experience of last year, that the state of the country about Castle Bernard justified its being recommended to be now included in the distressed districts, and have not failed to call the attention of the Government to this subject. Under any circumstances, the Commissioners regret that your Lordship instead of aiding this Board by explanations to the parties concerned in the difficult circumstances in which the Board is placed with regard to the suspension of the works, which it is not only their duty but the interest of their professional character to bring to a successful completion, should use the deservedly high influence of your Lordships' station to advise a course of expensive litigation.

I have the honour to be, my Lord,
Your most obedient Servant,
(signed) E. Hornsby,
Secretary.

The Witness.] Then there is another letter which bears upon the point. I should state that it has been impracticable to search the Board's correspondence for all the letters on this subject; it would take us three months to do so. When it is considered that we were in receipt of thousands of letters a day, and that they were put under different names, and so forth, it would take some very clever persons two or three months to find out the documents; therefore it is only some letters directed to myself personally, or some of the engineers, that we have been able to lay our hands upon. This letter is so late as 20th May 1849: "Sir,—We, the undersigned, land proprietors and landholders residing in that part of the Brusna Drainage District situated in the neighbourhood of Ferbane, do earnestly apply to you to have the great and needed kindness to give directions to have the drainage works commenced in this place; to give thereby some employment to the labourers, by which their now perishing families may be spared the further miseries of famine and destitution. Some of us have given employment to many hands. The district workhouse is nearly full, and yet for want of sufficient employment, starvation and distress are pressing heavily on the people, and we dread to send men, willing and still able to work, to meet the dangers in it of cholera and fever. The barony in which Ferbane is situated has repaid a larger proportion of the money borrowed on the relief works than any other barony, and we presume that money may be expended in these works. Mr. Fitzgerald can state that the works can be commenced. We therefore now anxiously appeal to your kindness and humanity to give without delay the necessary directions to have the works commenced, and thus to be the means of saving many families from pestilence, disease, and death. We remain, Sir, yours obediently, Henry King, C. K. Ballylin, John G. King, J. P. Ballylin, Robert Lauder, J. P. Moyclare, John D. Lauder." That letter is addressed to myself. There are very possibly (I do not know it) many other communications were we to search our correspondence.

778. The tendency of all these letters is, to show that there was a strong desire, as far as possible, to give employment by carrying on works, and so to relieve distress; still we do not think there is any letter which you have read that exactly meets the point, that these letters were written with a view of authorising the Board of Works to carry on the works to a great disadvantage?

There was the pressure that called for our ordering these works to be opened in the Cloughatanny and Ballyboughlin. The proprietors, perhaps, in this particular case, did not say we know that it will be a disadvantage, but I have read extracts from letters in which they did so, in which they said, We are the representatives of the proprietors of the whole of this district, and we demand that you shall go on to employ our people, and we wish our money to be spent to relieve our properties rather than so-and-so. That was the general tenor of them. They do not, perhaps, expressly state here, We know that it will increase our expense, but I can assure your Lordships that many proprietors did come and say that to us, and we have said to them, over and over again, Recollect the result of all this (your Lordships see it developed in that very minute about the weekly payments), this will increase the burden on your lands, and we cannot keep within

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estimates. And we have reported upon it, as your Lordships will see, when I come to the subject of estimates, in our annual Reports to Parliament.

779. The whole of this has no bearing upon the real point in issue further than this, that it may, to a certain degree, be a slight shadow of that which is, perhaps, the gravest charge, namely, that the Board of Works carried on works in all directions enlarging the scale, altering the plans, and so on, without coming to the proprietors, or asking permission; that they, in fact, took the liberty of putting their hands in other people's pockets just as they pleased, without asking their permission. That is the nature of the charge; and, so far as carrying on these large drainage works without consulting the proprietors, it is a very slight portion of the charge, and only perhaps makes a feather in the scale?

It makes an enormous difference in the cost; in very many districts it amounted to 50 per cent., in others to 100 per cent. of the cost. Working when you were surrounded with water during the winter, even though we worked by task, the payment to people to unwater the works and keep off the water, added enormously to the cost; and I have calculations furnished to us by engineers in the neighbourhood which will show that.

780. If there is nothing else bearing upon this point, perhaps you will have the goodness to proceed?

The next subject is that of estimates and designs; it involves the question of the ordinary and the summary proceedings. With respect to the summary proceedings, I have explained that 103 of the districts, containing 238,632 acres, are included under their operation; and 18 districts, containing 98,202 acres, under the ordinary proceedings, and of those 18 districts only six were undertaken before the passing of the 9th Vict. c. 4. Now, the first allegation, I believe, which is made is, that the estimates were viewed as contracts to be fulfilled by the Board. As regards the great mass of these estimates that have been made under the summary proceedings, I have submitted to your Lordships the nature of the circumstances and intentions under which they were prepared.

781. The allegation generally made is not quite that; but the allegation made is, that while the Board were bound by the principles laid down, both in the First and Second Reports, as to estimates and the mode of conducting the works, and while these principles were laid before the proprietors in giving their assent, the Board subsequently departed altogether from these principles, so that there was a breach of faith with the proprietors. That is the way in which the allegation has been put. First, we will begin with the estimates. The report says, "With respect to estimates, our instructions to the engineers are, to include every item of expenditure likely to arise, and to take special care that the amount shall be sufficient to complete the works in the plainest, but at the same time most substantial manner, for which they are held responsible; and before we finally sanction any undertaking, we adopt every reasonable precaution to assure ourselves that the works may be executed within the estimates." "Sometimes the very same parties ask for a pledge that the cost of the works shall not exceed the estimates; but this cannot be given, although we, both from consideration of duty, as well as inclination, make every exertion to have the works executed on the most reasonable terms consistent with efficiency, and feel tolerably confident that, except under circumstances of an unusual nature, they will be completed without an exceeding of the estimates. Further, "We would not be disposed to recommend or undertake works, at least in the commencement, for which a probable permanent return of 10 per cent. or more on the whole expenditure would not be had"?

That was in 1843, and the part which your Lordship read first was in 1844, under the ordinary proceedings, and before the famine, or the passing of the Summary Proceedings Act.

782. In carrying on the drainage works under the Drainage Acts, did you conceive yourselves bound to adhere to the principles set forth in these two reports?

There are two classes of cases, ordinary and summary. Under the ordinary, which I have explained to your Lordships, containing 18 cases, we conceived, as we had time for them, that we were bound, as far as the knowledge of the day

day would go, to make as close estimates as could possibly be. In the 103 districts under the Summary Proceedings Act there was no time for any such exactness; the instructions remained the same, but the impossibility of carrying them out was patent to every one: it was not required by the Act of Parliament, and it was not possible to be done.

783. Were any fresh instructions issued, upon the pressure coming under the summary proceedings, as to estimates and plans?

Copies of the clauses of the Acts of Parliament and memoranda were furnished to every engineer, with general circulars, and I think there were instructions in every case. I have before me one set of instructions sent to an engineer, and it is very probable, as it was very early in the year 1846, that it formed the basis of instructions in very many cases. It is addressed to Mr. Ottley, with reference to drainage in Mayo, the Kilmaine district: "Sir,—The Board request you will, without delay, proceed to Kilmaine, and report on the application for the drainage of that place under the Drainage Act. You have the report of Mr. Bowen, C. E., the plan and copy of memorial, with the Ordnance sheets, which are herewith sent. The objects of this investigation are, first, to obtain a judgment on the practicability and policy of the object generally, as one that will certainly be remunerative; second, to describe generally the nature of the works and proceedings necessary for the purpose; third, to give a general approximate estimate of the cost, including any expense to be incurred; fourth, a description of the lands to be relieved, and the extent to which they at present suffer; fifth, the probable number of acres to be improved, and a general estimate of the value of the improvement to be anticipated; sixth, a description, and as many particulars as can be obtained, of any obstructions that must be removed or modified for which compensation may be claimed. As soon as you visit this district, make a cursory examination, and report under the 'Provisions for Summary Proceedings,' referring to Mr. Bowen's report and section as far as available, but attending to the remarks made thereon, and especially to the design to be adopted, and the cost of the works, which seems to be insufficient as estimated." We had in this case the survey and plans of a local surveyor sent to us to form some opinion upon, to expedite the business; "also the extent of injured land or lands to be benefited, and the names of the proprietors, as defined by the Act; and as employment in this district is urgently pressed on the Government, you will report, as well as you can ascertain, whether or not it is urgently required; and, if so, where and on what terms tools can be most readily procured, probably from Galway or Castlebar, or both. You will please furnish a list of tools requisite, when instructions will be forwarded for procuring them wherever they can best be obtained. You will inquire in each district the most suitable place for storing the tools, and depositing report for inspection." Your Lordships see that it was a mere approximate estimate which he was directed to make: he was to ascertain the probable extent of the land, following the very words of the Act of Parliament; and the report was, as specified in this paper which I have had the honour to read to your Lordships, to be made out as rapidly as possible, so that relief might be afforded.

784. What is the date of that?

The 6th of April 1846, the Summary Proceedings Act having passed in March 1846.

785. Taking again a specific case, in order to fix attention, and to get a more direct answer, take the one which we have already spoken about, namely, the Brusna case; do you conceive that in framing the estimates for the Brusna works, the Board of Works were bound to adhere to the principles set forth in the Second Report?

I think so; I think the engineers and the Board of Works were bound to follow those principles in every estimate as far as it was practicable to do so; but when your Lordships come to the particular case of the Brusna, for which I have not the papers here, I shall be able to show your Lordships that, having obtained the plans and surveys, made with all the deliberation (this very plan which is here) that the circumstances at the time would permit (for we were in the famine in 1845, whilst part of it was finishing), having obtained those, we had data to go upon; much more complete data than we had in other districts; but the estimate and the design were made in all the hurry of a very short

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period of time; the engineer was a man of great practical skill and knowledge, who had been engaged all his life in public works, a great canal man. Having thus got the first-rate practical engineer connected with waterworks in Ireland, Mr. M'Mahon, we employed him upon that work; but at the very same time he had charge of it, so great was the pressure for professional men, that he was engaged also in making estimates for Lough Neagh, and for the Junction Canal; and I think Lough Corrib, with several of the great measures, were in his hands at the time. He had not completed, nor in fact gone into, the details of the design of the Brusna, as far as my recollection serves, when the pressure became so great, and the committee of proprietors were so urgent with him to get forward the Brusna, that he was called upon at once to prepare an estimate under the Summary Proceedings, and he did so; it was, as explained in the published correspondence, a very sufficient estimate for the project, and, as we explain to your Lordships in this same correspondence, we conceived that it would have carried out the original project had it been in other times; but the original project would not have effected the object of a successful drainage.

786. You conceive that you were bound to frame the estimates according to the principles set down in the Second Report, and that where there was any deviation, you were bound to account for it in some way or other, whether owing to the state of the country, or other causes?

Clearly, in equity, we felt and feel so bound.

787. Will you proceed with your statement?

It was alleged that these estimates were viewed as contracts; but from the very earliest stage (and your Lordship has quoted some of the very passages which I would have quoted), we announced to the proprietors, in our annual Report, that we could not be bound by estimates; that we would use every exertion at our command to get the best estimates from our engineers, and that we would give them the greatest consideration ourselves, but that it was impossible that we could be bound by them; and discussions took place at the very time, in consequence of that very paragraph which your Lordship has read in the public newspapers, with reference to the Fergus drainage, for instance, in Clare. Some of the proprietors objected to giving their assents, on the ground that we would not be bound by the estimate; and it was explained in the discussions which took place at the time, that we could not be bound, but that we must carry the measures to a successful issue; and that we were only an administrative body, executing the works for the benefit and at the risk of the proprietors; that whilst we took the greatest pains to accomplish that object, we could do no more than do so, and that if they did not choose to incur the risk, they ought not to assent. I should say also that Mr. Hamilton, the present Secretary of the Treasury, and Mr. O'Brien, M.P. for Limerick, proposed, on the passing of the 9th Vict. c. 4, that certain conditions should be annexed to the Act, to prevent estimates being exceeded; more than ten per cent. was one proposition, and more than 20 per cent. was another. It was explained that it was impossible to work the Act upon those terms; that money would not be lent if there was any such condition, and the result was, that those conditions were dispensed with. Then, as regards this great mass of summary cases, they are not estimates, within the meaning of that quotation of your Lordships, from the Reports of the years 1843 and 1844, written previous to the famine. The lands were frequently under flood when they were examined, and it was so stated in the Reports. There was rarely time to take even the levels, not to speak of sections; but the engineers had to adopt the Ordnance plans and levels. In many of the Reports no plans are published, nor anything like details of estimates; but a probable bulk sum is stated. The estimates are made without any reference to 3 *l.* per acre, as in the Fergus, the Lavally, the Rinn, the Shanagolden, and many others, in which the original estimates exceed the sum of 3 *l.* per acre. The maps and information were sometimes provided by the proprietors themselves. I have in the room a large map made of the Dunkellin district; it is nearly as large as that of the Ferbane, and it was prepared and forwarded to the Board by Sir Thomas Redington, for an extensive district in Galway. In many cases the mere preliminary reports that were hastily drawn up as a first cursory survey under the ordinary proceedings, were adopted and acted upon when the pressure from the famine came, in order to afford relief by employment, as in the Turloughmore, Kilbeggan, and other districts.

788. You have mentioned Sir Thomas Redington; it was generally said, that Sir Thomas Redington had taken counsel's opinion, with a view of bringing an action against the Board of Works; that report was very general about this time last year; are you aware whether it has any foundation?

I have never heard of it that I recollect, except through one of my colleagues, who heard it from your Lordship. I am aware that there was a great deal of objection on his part, at one time, to the results of the drainage of the Oranhill district; and when in the course of this examination we come to the results from drainage, I hope to be able to show your Lordships that the advantages from that very drainage are some of the most favourable in Ireland.

789. And that Sir Thomas Redington was unreasonable in finding fault with the Board of Works?

No, I do not mean to say that; Sir Thomas Redington's lands were drained, but I believe they were held by tenants. I believe to this moment the occupiers, whoever they be, have not cultivated those lands, or at least the greater portion of them, and the depreciation in the value of landed property, and the pressure of the famine and other causes, prevented him very probably from getting any increase in value from them, whilst he was, however, obliged to pay the charge for the drainage. The lands have been drained; but, excepting in certain portions of them, will not spontaneously produce increased value, unless other steps or measures of cultivation and reclamation are taken. Side by side, however, with these lands of Sir Thomas Redington's, in the same district, are other lands that have been rendered available, and they have in some instances, in a few years, given great profits and advantages from their cultivation, which would, if continued, enable the party occupying, if he pleased, to pay off the whole charge. In the case of one proprietor, on whose account, I believe, Sir Thomas Redington was very anxious, the increase has been such (as I shall be able to show your Lordships, by evidence from a proprietor, our valuator's reports, and a letter written to us on the subject), that the larger quantity of stock which he has been able to feed has afforded him from 60*l.* to 70*l.* a year profit, I think, over and above the amount necessary to pay the instalment.

790. The Committee cannot go into individual cases; it is impossible; they have no means to do so; they have no local information; they have not witnesses, and so on; but it is only incidentally that, perhaps, some explanation may be asked where a complaint has been made; for instance, where petitions have been presented in the case of the Brusna drainage, we happen to have a correspondence, which gives us an opportunity of looking into that more than into other cases. We merely mentioned the circumstance with respect to Sir Thomas Redington, because it was very currently spoken of in the Four Courts of Dublin about this time last year?

I should wish, in reply to the observation, to say, that it is by individual cases, if they could be brought forward, that the measure would be tested, because we should be prepared to give explanations on each individual case; and it is almost impracticable to meet your Lordships' views upon abstract questions, arising out of a case that may not exist; whereas upon peculiar cases, I think if your Lordships should, at any future period, be able to afford time, you would get the full explanation which you would desire.

791. That could only be accomplished by inquiry on the spot?

We can at least afford your Lordships the information, as far as we are concerned, and as the inquiry affects the Board of Works; we can show you the documents and the information upon which we have formed the conclusion that we lay before you.

792. Suppose a commission were appointed to make inquiry on the spot; would that, do you think, solve the difficulty?

I do not think that there could be any Commission better than the Committee of your Lordships if you had time to go into the matter. I believe that there is not a single case upon which we cannot satisfy you, and I am sure when we come to the cost of the works, which is the real question before your Lordships, that without any commission whatever your Lordships will be perfectly competent to judge of the matter.

 793. Will

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793. Will you have the goodness to proceed with your statement?

I have also to explain that under these summary proceedings all classes of strangers and untrained persons were employed as labourers, and frequently not even the full length of the works, or quantity of acres, was included in the cursory survey. It forms one ground of allegation against the Board of Works that these acres were added afterwards. I shall be able to satisfy your Lordships that in doing so we have done but simple justice; we should have done a very gross injustice to the proprietors if we had not included those acres, and spread the expense over them, in proportion to the benefits conferred. The full extent of the works and the acres are those which would constitute justly a whole district, if deliberately taken up under the ordinary proceedings, and it would be unjust to the proprietors to do otherwise. The Summary Proceedings enabled us to go to work at once upon a mere probable extent of land, and probable estimate, and the law then enacts that we shall not go further until we have brought it under the operation of the ordinary proceedings. We, therefore, in the revision which was necessary for bringing it under the ordinary proceedings, included all the lands and all the works which, under ordinary proceedings, would have been included in one.

The excess in the cost of works undertaken under the Summary Proceedings, over estimates which neither the legislature contemplated, nor, for the reasons above stated, your Lordships will see could not justly be called estimates within the meaning of the quotation from our First and Second Reports, arises from these causes: Increased works in tributaries and drains to relieve increased quantities of lands; that is an apparent excess over the original estimate, which does not, however, produce an increased cost upon the promoters, but, on the contrary, reduces that cost, because the scale of the river necessary to drain the whole of the lands would otherwise have been charged upon the individuals adjacent, or in the same limited extent; whereas now it is spread over all the lands, which ought justly to form a district. Increased depth of cuttings and improvements in the lines of river course. The maintenance and repairs of the works after their first execution; the sides frequently falling in; quicksands occur, and the bottom comes up to the top, and the work has frequently to be done over again. Remedying the effects of subsidence: it is denied in the correspondence with reference to the Ardee drainage, that we were justified in asserting that subsidence took place to the extent to which it does; we know that in bogs it has taken place to an enormous extent; but even in marsh and moory lands, and alluvial soils, it has taken place to such an extent as to make all the difference between the lands being free from flood or not, after the lands have subsided; they subside so much as frequently to come down below the level of what was intended to be the line of flood. The occurrence of rock, quicksands, and slipping materials, not anticipated, and that could not be anticipated, except by a most careful and protracted system of examination; whereas the surveys under these proceedings were of the nature I have described. Increased cost of relief works executed in winter, and in different parts of the country, involving increased cost of unwatering. Increase of interest, by the suspension of the works, either from scarcity or stoppage of funds. Before I leave that question, it is right to state, that we have adverted to it very fully in the correspondence which is before your Lordships. There is no estimate, however carefully made, which could in waterworks bear the effect of a suspension of the works; the evils are of such a class as will be naturally apparent to your Lordships' minds; the wear and tear of the banks, and the destruction of a great deal of what has been done; increase of interest, caused by delays or refusals of Grand Juries to present for county bridges. Increase of interest, and injury to unfinished works, caused by the omission of proprietors to furnish their second assents. Now, upon that question there is an enormous increase of debt going on, illustrated by the case of the Brusna. Let the Board of Works be right or wrong in what they have done, if your Lordships will have the kindness to waive that point for a moment, you will perceive the consequences in this work: two years have elapsed without the works being completed; the result will be, an increase of, I think, about 1,150*l.* a year, as the interest upon the money which has been expended; therefore some 2,300*l.* or 2,400*l.* will be added upon that item: we are very near the extreme limit of 3*l.* an acre; we have got some assents; but, pending our getting the remainder, we are maintaining the works, and watching them with an engineer, at a very reduced salary, 150*l.* a year, I think:

think: the works are in a most dangerous state; the river has been very deeply cut up through Ferbane, and water-courses, or conduits, for the river supplies, have been taken on each side of the new river; these are brought across in wooden shoots to supply the mills. In two or three cases already the dams have been cut, and the shoots endangered. If the suspension went on, and we were obliged to remove the parties, those millers who receive their supply of water at present through that course would, if deprived, by accident or malice, of their supplies, be in a position at once to bring actions against the Board, and recover heavy compensation from us, which would add, of course, to the cost of the works to be charged upon the land; whilst the monies lent by private parties, as well as the public, are, of course, to some extent jeopardised. There are many other cases besides that with which I can illustrate the evils of delay, and where the accumulation has gone on rapidly in consequence.

794. We presume that the cause of the stoppage of all these works is, that the proprietors have lost confidence in the Board of Works; that they are afraid of giving their assents, lest they should be involved in a further, and perhaps almost indefinite outlay; do you think, with the view of meeting that state of things, that a commission to arbitrate, as it were, between the Board of Works and the proprietors, to examine the works, and to point out to the proprietors if they were in error, or to point out to the Board if they were in error, would have the effect of inducing the proprietors to give their assents?

I cannot say in the Brusna (Ferbane) case whether it would or not; in many others it would not, whilst I am satisfied that the result of any inquiry of the kind would be to remove the erroneous impressions from the proprietors as regards the cost of the works; and I should think that if your Lordships are able to go into the question of costs, your own Committee will be competent to judge by the facts which on that question I am prepared to lay before you. I am satisfied that nothing will give so much confidence to the proprietors in Ireland as a full examination by this Committee, since it has been appointed. If this Committee shall be satisfied, from the full inquiry that they should be enabled to make, I think it would restore confidence in a great portion of Ireland. But there are certain districts in Ireland where, as your Lordships will see from the evidence, the parties will not give their assents. That applies to cases where we have not expended the money at all that was in the original estimates published before the parties assented. It is expressly put forth in the correspondence in an official letter to us by one gentleman, Mr. John O'Brien, M.P. for Limerick, that the reason why they will not assent is, that they think we cannot make an award, and that therefore they will avoid the repayment.

795. If a commission went to that work, do not you think that it would disabuse their minds if upon that commission there was a barrister?

I do not. We have replied to that letter, by stating that we were advised that we could make an award, and we have shown that we have made an award in several other districts; but it does not seem to have removed the impression. They asked for a valuation of the lands in detail; we furnished that, and we were told that then the assents would be given, but they have not been given yet. There are other cases of the same kind; that of Lavally Athenry is one of peculiar hardship.

796. The opinion prevails very strongly (it may be quite an unfounded one) that a very considerable quantity of these loans, both public and private, are in jeopardy in consequence of the way in which the works have been carried on; that under the proviso in the first section of the Act of the 9th of Victoria, which provides that the annual instalment, with interest, is not to exceed the improved value of the land, these loans are to a certain extent in jeopardy. We do not mean to say whether the law has been rightly interpreted or not, but that is the opinion of barristers of eminence. Under these circumstances would it not be desirable that there should be an inquiry of that sort?

I do not think that an inquiry will remove it. We have stated the jeopardy in our annual Reports, arising from this cause; not from any inefficiency in the law, but from our conviction of the great injustice that would be done by making an award in the present state of things. In small districts where a benefit was conferred by the works executed within the limit of 3 *l.* an acre, so as to enable us justly to tax the lands that were benefited, we did so, and we have carried out the award. For instance, in a case in the county of Roscommon, where Lord Lorton

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was an original promoter, he assented to the first estimate, 3,142 *l.* We were not to exceed the estimate, there I think the revised estimate for the Cavetown district was 3,106 *l.*, on the advice of his agent, his Lordship's second assent was refused, though we had only expended 1,933 *l.* We wrote to all the proprietors, and said, "We shall be compelled to make this award, if you do not give us a majority of assents," and we gave them a certain time; they did not succeed; we held a public meeting, and we were compelled to make the award. In that case there was considerable advantage conferred; but as to the proprietors whose lands were advantaged, I wish to put the injustice of withholding the second assent before your Lordships; they must pay nearly double the expense per acre which they would have paid if the whole work had been carried out for the original estimate, which it would have been. I do not think that a commission could remove that difficulty, or procure the second assent.

797. That is not quite the point which is put to you. The point is this: that under the proviso in the Act of the 9th of Victoria, section 1, the annual interest, with the instalment, must not exceed the estimated value of the improvement of the land owing to the expenditure?

I am aware of that.

798. Supposing that a work was undertaken which ought never to have been undertaken, a work which would not pay, or supposing that, in carrying out a work there was a great waste, and that the annual improvement, fairly valued, was not more than one or two per cent.; in such a case, under that proviso, it is held that the capital would be lost. Looking to the amount of public money that is staked upon these drainages, looking to the amount of private money also, do not you think it is a proper thing that both the actual state of things and the law should be inquired into by a competent authority?

I do; and I thought this Committee was established for that purpose. I do not think that the result of any inquiry would alter the circumstances. If the parties cannot be induced, by returning confidence, by improved seasons and crops, and by seeing the results in other districts, they could not be induced by any means but that of legislation for the purpose of winding up the cases. We have, for the last three years, brought these subjects before the two Houses of Parliament in our annual Reports, and we have shown the necessity of legislation, in order to wind up those cases. There are 13 districts which are under the circumstances to which your Lordship refers as to second assents.

799. Will you proceed?

Another cause of excess in these cases is compensation for damages, and exorbitant findings of juries, as in a case that, I dare say, a noble Lord present is very well aware of, in Mayo, where a Court having been held under the Act of Parliament, compensation was awarded for the injury to a mill, I believe to the amount of 175 *l.* Against that compensation, under a certain clause in the Act of Parliament, there is a power to set off the improvement in the water-power which will be conferred by the measure. The parties deemed it right to appeal; the case was argued, and we sent our counsel and our solicitor to defend the proprietors; but nevertheless a very exorbitant finding of 600 *l.* odd was made by a local jury; those are classes of cases, and many of those that I have enumerated are classes of causes of excess entirely without the control of the Board of Works, which, of course, become chargeable upon the districts, and which help to make the aggregate of excesses for which the Board are popularly so much blamed; of course, the accidents from sudden floods, and drains breaking down, and the works being carried away, is another cause, and, latterly, the want of labourers has considerably retarded the operations in some of our districts in Galway. At Turloughmore, for instance, where we had work for 2,000 or 3,000 men, and where there will be a very large sum for interest and superintendence, and so forth, we have scarcely been able to get more than 600 men during late years, whereas in 1847 we were enabled to have, I think, from 3,000 to 4,000 men per day. That cause has operated there; it has operated in Leitrim; it has operated on the East Coast of Ireland; it has operated in the Ardee and Glyde cases very considerably, and protracted the operation of the works for nearly a year longer than they otherwise would have been. This is another cause

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cause of excess entirely beyond the control of the Board of Works. Before quitting the subject of the Summary Proceedings, I wish to state, that the period when we come to the expenditure of 3*l.* an acre, is the legitimate time when those matters are all brought before the proprietors; they are brought forward in our annual reports to Parliament repeatedly during our operations; but when we come to the question of getting the second assents, then we have directed that a supplemental report shall be prepared, and that the whole of the information shall be laid before the proprietors to enable them to judge before the decision is made.

With reference to the estimates and designs of districts under the ordinary proceedings of the Act where the Board would be liable to the accusation of having exceeded the estimates, the causes, besides those which I have enumerated as entirely beyond our control, have been very generally the increased depth and size of the channel to discharge the floods which have been caused by the increased knowledge of the relation between the discharge of rivers and the fall of rain. When these operations began, there was a great deal, as the noble Chairman is aware, of information obtained throughout Ireland as to the average fall of rain, that is to say, there were a few registries kept in different places; but we had no information to be relied upon of the actual quantity of discharge consequent upon given falls of rain, and still less had we of the maximum discharge of rivers. It will be evident to your Lordships that the very first question which arose in designing channels for new river-courses, a work scarcely undertaken, I believe, in almost any country to the extent that it has been in Ireland, was, What body of water shall we have to carry off? A second question arose, What is the maximum quantity, for, in order to ensure success, we must keep that maximum quantity within the limits of the conduits or channels? We therefore, at a very early period in 1839, began to accumulate facts, and the result was published in the proceedings of the Institute of Civil Engineers of Ireland. Will your Lordships allow me to show you some of the final results at which we arrived? During the months of January and February last we had the most extraordinary fall of rain that we have yet had: this is a diagram showing the quantity of rain that fell in that period: in Galway, for instance, there fell 30 inches of rain in 46 days; it would be almost incredible that there should have fallen such a quantity, and great doubts were expressed by ourselves; but by examining the rain gauges in every possible way we found it to be so: this shows your Lordships the western stations [*pointing to the diagram*], —that the central, this the eastern, and that the northern. This diagram section is assumed to be taken on a line passing east and west through Ireland; here are the stations where the rain gauges have been kept: here is the quantity of rain that fell during the 46 days; this is the fall of rain in January; that is the maximum fall of rain in 10 consecutive days, the maximum fall of rain in five consecutive days, and the maximum fall of rain in 24 hours. Now your Lordships will observe that we had at several stations, such as Tuam and several others, 12 inches of rain in that period of 46 days. We had no record that showed anything like the same quantity of rain to be discharged; and notwithstanding we had information about average falls in the year, we never should have assumed that there would have been anything like such a quantity as that falling in that space of time, or the maximum fall within the consecutive periods mentioned; yet we were required to succeed in making our conduits efficient for the carrying off of the flood waters of those districts. The mode we adopted was to assume a quantity to be carried off, from observations made by myself on the Shannon in 1839, where we found that we had a film of water of about half-an-inch in depth in a given catchment basin to be carried off after very heavy falls of rain. But, to be brief, the information we have arrived at now, from accumulated facts so far, is, that we have quantities varying from half a cubic foot per minute per acre of catchment basin to 13 cubic feet per minute per acre of catchment basin to be discharged from different localities. Such an enormous variation as that, depending upon localities, depending upon circumstances, that could only to be known by a long registry of facts, state of cultivation and aspect of lands, and so forth, will show your Lordships how impossible it was, in the absence of statistical, practical or scientific information on such points in the early stages of the drainage operations, to arrive at anything like complete conclusions by which we could be finally

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bound. We therefore made the channels as large as the information before us at the time would enable us to approve, and we went on gradually, as the trustees of the proprietors, on the principle, that if they were not sufficient, we could easily enlarge them; but we never executed anything that has proved yet to be too large, and that is a point which I wish particularly to bring before your Lordships, and to press upon your attention.

The Witness is directed to withdraw.

Ordered, That this Committee be adjourned to Wednesday next, at One o'clock.

Die Mercurii, 23° Junii 1852.

THE EARL OF ROSSE in the Chair.

WILLIAM THOMAS MULVANY, Esquire, is again called in, and further examined, as follows:

800. JUST as the Committee was breaking up on the last day, you made this observation, which seems to call for a question, "We therefore made the channels as large as the information before us at the time would enable us to approve, and we went on gradually as the trustees of the proprietors, on the principle that if they were not sufficient, we could easily enlarge them; but we never executed anything that has proved yet to be too large, and that is a point which I wish particularly to bring before your Lordships, and to press upon your attention?"

Yes.

801. Upon that point the Board and a certain number of the proprietors, perhaps most of the proprietors, are at issue; the proprietors, on the other hand, maintaining that the works were much more, with reference to the object they sought to accomplish, namely, the conversion of the low lands into pasture, the Board rather seeking to convert the low lands into arable land?

We had no positive intention to convert them either into pasture or into arable; we had only the object in view to effect the drainage by confining the floods within the channels. It was for that purpose that I brought before your Lordships the information that we had obtained of late years as to the fall of rain and discharge of floods. These measures were quite novel in Ireland. There existed no data upon which to ascertain the discharge of floods from rivers that were unimproved; no data of any extent to rely upon; we proceeded to procure data as we went on with our operations, and some of the results were shown in the diagram that I exhibited to your Lordships. We found then, that to accomplish the object of carrying off the floods within the channel, we must, as far as practicable, carry off the whole of the floods, because it is quite beyond our power, and, we believe, beyond the power of any individual to fix a channel which will just accomplish the object of allowing the lands to be flooded now and then (which is the point I believe that your Lordship particularly addressed yourself to) in the winter season, and prevent its occurrence in summer or autumn when it would do mischief. Unless we had control over the fall of rain, an artificial control over its discharge through the rivers by the existence of large lakes or reservoirs in which the flood-waters could be conserved and measured out again, it appears to be physically impracticable to make such a design as that the floods will only occur occasionally in winter. It is very true that some of the proprietors may wish to have their lands in pasture; but the result of all our experience is, that in most of the districts in Ireland, they, of their own accord, convert the lands into tillage or meadows, for instance. If, then, we cannot completely control the floods and keep them within the channel, the floods may occur at a time when some of the proprietors' lands are under tillage, and destruction may go on to an enormous extent, as practically happened in the Ardee case. I will illustrate the matter still further before your Lordships by the very case of the Brusna. In the Brusna the discharge of water has gone on year by year increasing as the upper part of the country became improved. As to the precise amount that was to be delivered, we had, as I before said, no data by which we could be concluded. We have been progressively obtaining data. Now the greatest flood that has yet occurred in the Brusna was 268,000 cubic feet a minute, which amounts very nearly to nine-tenths of a cubic foot per minute per acre of the Catchment Basin.

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Basin. The observation of our principal engineer is, that the discharge has increased during the progress of the works from 178,000 to 268,000 cubic feet per minute, and it is anticipated to reach one foot per acre when the works are completed. Now there are 304,000 acres in the catchment. If we assume that it reaches one foot per acre, that is exactly one-tenth additional to the quantity that now comes down. That one-tenth will be about 30,000 cubic feet per minute per acre. It is beyond our skill, and, I believe, beyond the skill of any one to arrange, so that that 30,000 cubic feet per minute additional quantity of water should come down just at the period when it would do no mischief.

802. But still the proprietors being of one opinion generally, and the Board of works of another, do you not think it would have been proper to have consulted the proprietors before you undertook to carry out your views in that respect; take the 19th Report; you complain that the proprietors were always urging the adoption of half-measures; that is what was meant by the question which was put to you, the proprietors urging half-measures; that is, in fact, the proprietors always urging small works which would not guard against extraordinary floods, but which would guard against ordinary floods and make good pasture, of course with the occasional risk of injury to meadow land from summer floods?

I do not know the passage to which your Lordship refers, but I think you will find that we have always declined to undertake half-measures.

803. From that report, and also from the tenor of the other reports, of course drawn up by the Board, taking the evidence in fact from their own mouths, it is quite clear that the wish of the proprietors was to have the works carried out as half-measures; that is, to have the works on a small scale according to the original plans and estimates; whereas the Board taking a different view, perhaps very properly, have departed from the plans and estimates, and carried out the works as large measures?

Some proprietors, but not the proprietors of Ireland, nor the proprietors of all the districts; a very large number of them, on the contrary, having derived the advantage of the shallow system, have themselves pressed upon us to adopt the other, and wherever it has been expedient for any reasonable sum, we have done so.

804. Will you have the goodness to mention instances?

The Blackwater and the Borrisokane.

805. Will you have the goodness to mention instances, because it is in your own report put generally, and the inference would be that you applied generally to the proprietors?

The observation was made in the early stage of the drainage, when the operations were very small; it was in the First Report in 1843; in the Blackwater, in the Ardee and others, as I stated in my evidence on the last day, the proprietors in effect said, "We only want to be relieved from the floods; we do not want any more;" then we ourselves found that it was a very nice question indeed, just so to make the channel in the absence of statistical or scientific information upon the subject, such as would accomplish that precise object; and it was found necessary to do more; but there are no works which have been executed, that I am aware of, which do much more than confine the floods within the channel; and to illustrate it again by the Brusna, in this particular instance, that very large tract of land which is shown as blue on the map, extending from Ferbane up to towards Clara for eight or nine miles, had only a fall of about a foot in the water surface; we have only been enabled by deep sinking to get a fall of nine inches in a mile in that cut; we have not yet accomplished it; six or seven miles of that portion marked deep blue are alluvial deposit, and I believe some of a very soft boggy nature; and we know, now it has been ascertained by experience, and it is absolutely marked upon the section in my own handwriting in the year 1849, that those lands will subside; the exact amount to which they will subside it is almost impossible to predict; so that in the Brusna (Ferbane), as to which this very observation is made in the correspondence, we are not perfectly certain that the cut, deep as it is, will do more than accomplish the object which the proprietors say they desire, of having on some of those lands a partial flood.

806. The question put to you was this: the estimates having been made, and the

the result obtained for what you call half-measures, did you conceive yourselves at liberty with other views to exceed those estimates?

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Each case would require a separate explanation; in the Brusna (Ferbane) we consulted the proprietors at the very time when the limit fixed by the Act of Parliament (because it happens to be under summary proceedings) requires it. In the written memoranda which I have prepared for to-day, I have gone into that subject more deliberately than I could in speaking, and if your Lordships will permit me to read them when I come to that point, it will be more satisfactory, I should think, to your Lordships.

807. To prevent misconception, perhaps it is necessary to put another question on the point. You say that you consult the proprietors, when it is necessary, meaning that the work cannot go on without it. But previously to that necessity arising, you deviate from the plans and estimates, and then the proprietors find themselves in this position, that perhaps half the money has been expended upon a very large work, totally different from the plans and estimates; and that unless they assent to the completion of that work, the original sum is gone?

No; to test the thing again by a particular case, the rest of the money is not gone. In the Brusna (Ferbane) for instance, there is an enormous district drained; 8,700 acres are drained already, and the great outlet for the rest is almost completed, so that a couple of thousand pounds more will complete that outlet into the lowlands, as well as I recollect.

808. As a matter of fact, before you consulted the proprietors, did not you make a complete change in the plans and estimates in that case?

No; not a complete change; that is one of the things which in the paper I have written, I will bring before your Lordships; we increased the depth gradually as we went on, from shoal to shoal. When we found the necessity for it by the height to which the floods actually rose, we acted upon the tentative principle, to avoid the very charge that could justly be made, that we made an extravagantly large channel in the first instance, so as to be perfectly safe; and upon that subject again, I beg to call your Lordships' attention to the absence of statistical or scientific knowledge, upon which an actual defined channel could be made, and to the fact that the statistical knowledge of the fall of rain and the discharge from given catchment basins varies in different parts of the same island of Ireland. These tables of the discharge of rain in different districts in the eastern, western and central parts of Ireland, I would wish to hand in.

The Witness delivers in the same, which are as follow:

ARTERIAL DRAINAGE, under the Acts 5 & 6 Vict. c. 89, &c.

SCHEDULE No. 1.—WESTERN DISTRICTS.

OBSERVED FALL of RAIN and DISCHARGE of RIVERS, as compared with their CATCHMENT BASINS.

NAME.	COUNTY.	Catchment.	DATE of Observation.	RAINFALL.	Total Discharge per Minute.	Discharge per Minute per Acre.	OBSERVATIONS.
		Statute Acres.			*Cub. feet.*	*Cub. feet.*	
ugh Dálla - -	Mayo - -	32,000	9 April 1850	2 inches in 24 hours -	127,000	3·968	Works not complete.
rgus - - -	Clare - -	104,960	8 Feb. 1852	2·07 inches in 3 days -	79,680	0·76	- - Numerous lakes; districts only partially opened.
ıin - - -	ditto - -	34,120	5 Feb. 1852	2·07 inches in 3 days -	37,677	1·10	- - Works considerably advanced; one large lake acted as a reservoir.
ınagh - - -	Galway - -	11,200	12 June 1851	2·07 inches in 3 days -	155,800	13·02	- - Mountain torrent; no rain-gauge in the immediate vicinity.
ınivea - - -	ditto - -	54,000	6 Feb. 1851	1·13 inches in 2 days -	75,562	1·40	- - Works only partially executed (in lower reaches of the district).
ınmore - - -	ditto - -	96,161	5 Feb. 1851	·96 - - - -	157,356	1·63	- - None of the upper portions of the district opened.
ugh Corrib - -	ditto - -	780,000	9 Feb. 1852	- - - - -	700,000	0·89	- - The upper country partly opened, but the works to regulate Loughs Mask and Corrib not completed.
olaney - - -	Sligo - -	17,600	16 Jan. 1851	- - - - -	73,958	4·20	A mountain catchment.
ınmoran - -	ditto - -	3,200	- ditto -	- - - - -	11,550	3·60	- - ditto.
umcliff - - -	ditto - -	14,200	- ditto -	- - - - -	30,294	2·13	- - A mountain catchment, but Glencur lake serves as a regulator.
lla - - -	Mayo - -	33,500	17 Jan. 1851	1·30 inches in 2 days -	38,304	1·14	- - Upper works not opened; lakes serve as regulators.
ugh Lannagh - -	ditto - -	20,640	- ditto -	1·40 inches in 3 days -	26,344	1·276	Large lakes serve as regulators.
ugh Saleen - -	ditto - -	2,625	13 Jan. 1851	0·97 inches in 2 days -	2,752	1·048	A lake regulates the discharge.
sk and Robe - -	ditto - -	70,000	16 Jan. 1851	1·40 inches in 3 days -	81,068	1·158	Upper works not opened.

Schedule No. 2.—Central Districts.

Observed Fall of Rain and Discharge of Rivers, as compared with their Catchment Basins.

NAME.	COUNTY.	Catchment.	DATE of Observations.	RAINFALL.	Total Discharge per Minute.	Discharge per Minute per Acre.	OBSERVATIONS.
		Statute Acres.			*Cub. feet.*	*Cub. feet.*	
Brusna	King's, &c.	304,816	10 Jan., 26 Feb. 1851.	6·51 inches	268,000	0·88	- - Discharge has increased during the progress of the works from 178,000 to 268,000; anticipated to reach one foot per acre when works are completed.
Boyne	Meath, &c.	304,139	29 Jan. 1851	0·23 inches in 24 hours previous.	151,074	0·50	- - Works far advanced; no lakes, but catchment basin very flat.
Kilbeggan	Westmeath, &c.	77,440	14 Jan., 21 Feb. 1851.	5·74 inches	33,577	0·448	- - Seven-eighths of district open; Lough Ennel, 3,603 statute acres, acts as a partial regulator, but is not yet fully regulated.
Lough Neagh	Derry, Antrim, &c.	1,411,520	18 Feb. 1852	8·75 inches	696,000	0·51	- - Lough Neagh itself, containing about 100,000 acres, acts as a regulating reservoir.
Belfast	Linen-hall	Donegal-place	1 Jan., 15 Feb. 1852.	8·70 inches.			
	Waterworks	Suburbs	1 Jan., 15 Feb. 1852.	8·89 inches.			
Eslin	Leitrim	14,000	16 Jan. 1851	1·11 inches 2 days previous.	21,700	1·55	- - Several lakes act as regulators; works not fully complete at the time.
Leesborough	Monaghan	6,000	- ditto -		14,700	2·45	Lakes act as regulators; works complete.
Ballinamore and Ballyconnell.	Cavan	90,000	15 Jan. 1851	1·83 inches in 1 day	101,035	1·12	- - Lakes not fully regulated; large part mountain catchment.
Loughs Oughter and Gowna, &c.	Cavan, &c.	309,000	18 Jan. 1851	3·22 inches in 8 days; 1·75 in 2 days.	257,771	0·83	- - Loughs Gowna, Oughter, and several others act as regulators; works only partially executed.
Lough Erne	Fermanagh, &c.	974,000	23 Jan. 1851	- ditto -	657,511	0·67	- - Extensive lakes as regulators; works not commenced.
Burrisinossory	Queen's and Tipperary.	36,000	16 Jan. 1851		64,284	1·78	Works nearly finished.
Delour	Queen's	25,216	- ditto -		220,260	8·73	Mountain torrent.
Templemore	Tipperary	33,000	- ditto -		97,200	3·00	- - Works nearly complete, part mountain catchment.
Kilbride	Kilkenny	8,320	- ditto -		42,327	5·00	Works nearly finished.
Kilmaganny	ditto	15,360	- ditto -		77,076	5·00	Works far advanced.
Shinrone	King's	36,000	- ditto -		38,689	1·07	Works nearly finished.
Castlebernard	ditto	42,000	20 Aug. 1848	1·95 inches in 1 day	60,865	1·50	No portion of the upper works opened.
Burrisokane	Tipperary	28,500	- ditto -		44,076	1·54	- - Works for shallow drainage finished, but upper country not opened or drained.

Schedule No. 3.—Eastern Districts.

Ardee	Meath and Louth	70,280	21 Aug. 1848	2·33 inches in 3 days previous.	78,759	1·12	- - Flooded the lands; this was before deeper works were executed, and work of upper country completed.
			16 Jan. 1851	1·20 inches in 2 days	69,142	0·983	- - Works of upper country complete and deeper works in Ardee far advanced.
			4 Feb. 1852	0·76 inches in 3 days	65,756	0·935	
Glyde	Louth, &c.	79,433	18 Jan. 1850	0·65 inches on 14th, 15th, 16th and 17th, 4 days previous.	57,179	0·719	- - Greatest fall on 15th, 0·68; rain gauge near the outfall of the district and does not properly show the rainfall which produced the flood; several lakes in the district, but not fully regulated.
Glenariff	Antrim	9,200	no observations		50,000	5·43	Mountain torrent.

Extracted from the District Engineers' Reports,

5th June 1852. William Forsyth.

809. With regard to that particular work to which you have been referred, the words in your Engineer's Report are to this effect, that one great cause of the increased expense was a complete change in the character of the work, substituting a new river channel for the original one as proposed?

Your Lordship is quite right about the general words, but if you will read the explanation, you will find that we have explained that point. I am sure your Lordships do not hold the Board accountable for every word that appears in the reports of their engineers; this report is written by a foreigner, a German; it is in page 36 of the correspondence. The words are, "This excess is caused in the first instance by a complete change in the original proposed measure."

810. "Substituting for a great portion of the length of the district a new river-course, instead of following the old one, as formerly intended;" that is in page 37?

That refers to some of those minor channels which run up through the district where the course is exceedingly tortuous, and where it is found better for all purposes to make a "give and take line" along the boundary, instead of following the tortuous old course. But the explanation in the printed correspondence is this: "This expression is contained in the supplemental report of the engineer of the district made to the Commissioners, and has been understood by Lord Rosse as conveying more than was intended. There is no general change of plan, but there is an increase in the size of the channels, as is very fully explained and illustrated by sections in the subsequent part of the same report."

811. In the petition respecting that particular work, there is this passage: "Your petitioners are further confirmed in the opinion they have ventured to express as to the conduct of the Board of Works, by referring to the original report of the engineer who surveyed the whole district, the vale of the Brusna and its tributary streams; that district, for the convenience of obtaining assents, was divided, the upper portion of the river being called the Kilbeggan district, and the lower the Ferbane district. There are consequently two reports, but they must be looked at together. In the report on the upper district, the engineer suggests two plans, the one on a much larger scale than the other. He says that the larger would cost so nearly the fee-simple of the land, that 'to call upon the proprietors for such an expenditure would be the sure means of shutting out all hopes of seeing these flooded lands placed in a state fit for cultivation;' he then made therefore the smaller plan. To the smaller plan the proprietors assented, and having so committed themselves, the Board of Works, without consulting them, carry out the larger plan, and place them in this dilemma, that they must either sacrifice the sum already expended, or involve themselves in a further and indefinite outlay;" that is the charge in the petition?

The Kilbeggan district is a separate district, and was undertaken quite separately from the Brusna.

812. It is part of the same river?

It is a tributary of the same river; a part of the same river. We have explained in page 29 of the correspondence that "The Committee are in error on this subject. The observations of Mr. M'Mahon in his report on the Kilbeggan district had no weight or influence with the Commissioners in determining the works on the Brusna (Ferbane) district; the Committee misapprehend the professional tenor of Mr. M'Mahon's remarks. It may be right, however, to state, that the adoption of the plan of reservoirs and improved mill-power on the Kilbeggan district conferred a commensurate advantage on the Ferbane, in diminishing, in some degree, the supplies in flood from that portion of the Catchment Basin." I have the original report here of Mr. M'Mahon on the Kilbeggan district; I only found it the other day; this passage to which the Committee advert is precisely in the same words in his original manuscript report.

813. It is in the printed report?

It is also in the printed report; it remains exactly in the same way. I beg to call your Lordships' attention to the fact that this expression did not escape Sir John Burgoyne's notice nor mine. Sir John Burgoyne was at that time

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Chairman of the Board of Works. My observation is written opposite that page, and is to this effect: I wish to show that we are not responsible for every word which the engineer puts in his report to us upon the subject; this was a preliminary report on the Kilbeggan before any more detailed survey was made.

814. The actual charge against the Board is this: that they obtained the assent of the proprietors to a small work, and then they carry out a large work, which the engineer did not venture to put before them, because he said there was no chance of the proprietors assenting to it, inasmuch as it would cost the fee-simple of the land?

With reference to the Brusna (Ferbane) district, he made no such observation; he made it with reference to another district, though part of the same river, under different circumstances. If your Lordships would allow me to read my observation, it is to this effect: "I think this is too strong;" this is a private minute on the engineer's report. "If we were required to carry off such a quantity of water, we would exert our ingenuity, and by embankment with drains or otherwise effect the improvement for greatly less than half the fee-simple;" that is my minute. Sir John Burgoyne writes, "I do not quite comprehend this argument; it would seem to imply that without a compensating lake, it would be impracticable at any reasonable or moderate expense to effect the drainage of such a basin; but do we not find otherwise in other cases? Do all our engineers follow the same theories regarding the fall of rain-water, and the portions to be carried by the watercourses? The information," he goes on to say, "as subsequently referred to, namely, the advantage of Loch Ennell, is rather geographical than geological;" that is of no importance, it is in reference to a mistake in the wording of the report. The circumstances of the Kilbeggan are very peculiar; Loch Owell, which formed the original source of it, has been cut off, and its supply is taken to the Royal Canal, as your Lordship is aware. Loch Ennell, which is below Mullingar, afforded the means to the engineer of diverting into it the flood-waters of a large portion of the Catchment Basin; by allowing them to be conserved in that lake, every flood to go in there, and only to be delivered out by degrees, we get the command of the floods of that district to supply the mill-power below, and to facilitate the drainage; no such argument, no such passage was ever written or published, or intended with reference to the Brusna (Ferbane).

815. But if it did not relate to the lower district, we presume it related to the upper district?

Yes.

816. We find with respect to the upper district, that what the proprietors said was perfectly true, because they had assented to the smaller work, 10,397*l.* 13*s.* 10*d.*, and the sum actually expended is 17,439*l.* 2*s.*, and there is a further sum required to complete the work of 10,357*l.*; so that if what you state does not apply to the whole district, and therefore does not apply to the lower, and if the proprietors were in error in saying that it applied to the lower, they were quite right in saying that it applied to the upper?

It does apply to the upper, so far that we changed the system there; but there is also a very great additional source of expense in the upper district, in making the courses deeper for the purpose of mill-power. It was intended to spend a very large sum, 9,000*l.*, for the improvement of mill-power, which was in one of the estimates. I am not aware whether the estimate which your Lordship has before you includes that or not.

817. Then the proprietors assented to the smaller work, 10,397*l.*, and the revised estimate, that is for the larger work, which was to cost the fee-simple of the land, and to which there was no chance of the proprietors assenting in the first instance, is 36,828*l.* The charge which the proprietors bring, if it does not apply to the lower district, applies to the upper, and of course with equal force?

The fact of our increasing the depth of the drainage in the Kilbeggan district, and increasing the expense, is true, and is one of those things referred to in the explanations of Friday last, and more fully in those which I shall come to to-day.

818. Substantially, what the proprietors say is simply this, that there were two specific

specific plans made by the engineer; that the Board of Works did not propose the larger plan, because there was no chance of the proprietors assenting, inasmuch as it would cost the fee-simple of the land; that they therefore proposed the smaller plan, and that the proprietors assented to the smaller plan, but that having so assented, the Board of Works carry out the larger plan?

Not so; there were not two plans, in fact; that Report which your Lordship has before you, and that original estimate, were made under the ordinary proceedings, as the first or cursory preliminary report for the Kibbeggan district, to get an approximate idea of whether it would be desirable to undertake that district or not, and in the evidence which I gave before your Lordships on Friday last, I showed you that this district, amongst others, was brought under the operation of the summary proceedings in consequence of the proprietors themselves, after a delay of, I believe, a year, or two years, having failed to make up sufficient subscriptions to get the more detailed or deliberate survey and sections prepared, which the ordinary proceedings required. We had applications from Sir William Leeson and others in that Kilbeggan district, when the pressure of the famine commenced, to bring the measure under the summary proceedings; and the letter directing that it should be done I had in my hand this morning, in which the engineer was directed to at once examine the cursory report that he had prepared, and lodge it for the inspection of all parties, and to receive the assents; therefore, that case was brought under the summary proceedings, and as coming under the summary proceedings, the limit of 3*l.* an acre, which was so fully explained on the last day, was the limit to which the Board went, before they had the opportunity and the requirement of the Act to consult the proprietors about the completion of the works.

819. With respect to another work, called Derryholmes, we observe that the work is thus noticed in page 41 of the 18th Report. The Board are stating the difficulties which they have had with respect to a variety of works, and then they come to the circumstance of those works being carried on as famine works, and the want of funds, and so on; and then, as presenting a pleasing contrast, they say, "Whilst the benefits of an opposite course where sufficient funds have been provided, and the Board have been enabled steadily to proceed with the works without interruption, are shown in the reports of Mr. Ottley, with reference to Glenarriff, in the county of Antrim; Mr. Klasen, as to the Ballinahown, in the county of Westmeath, Derryholmes, King's County, and other districts; and Mr. Latimer, as to that of the Burren, in the county of Carlow." That is the way in which that work is described. Then we observe, that of that work, in the Parliamentary Return, the original estimate is 3,608*l.*, and we observe that the amount actually expended is 6,652*l.* 3*s.* 11*d.* We observe further, that that work was commenced on the 8th of June 1849; that was not a famine work; further, it is stated, but it is mererly stated, in the documents which have been forwarded to me, that the poor-rate previously in that district was exceedingly light; for the years 1848 and 1849 the poor-rate was 1*s.* 8*d.*; therefore, the parties state that there could have been no distress to increase the cost of the work.

I do not believe that the cost of the work in the Derryholmes would be at all attributed to any such cause: your Lordships will observe, that the total amount of the estimate is still within 3*l.* an acre on the lands originally proposed to be drained; whereas, in fact, a much larger portion of lands have been drained for the sum which amounted to 3*l.* an acre on the original quantity of lands. And in several instances we were asked and required to extend the drains to accomplish that object. As we had the means to do so without increasing the expenditure of 3 *l.* an acre on the lands to be drained, we did so, and the result is, that the expenditure on the whole of the lands in that district is only 1*l.* 3*s.* 11½*d.* per acre, as by the final award may be seen in page 454 of the General Correspondence laid before your Lordships. The excess, therefore, was for additional works, to relieve additional lands, and that conferred most important benefits upon the original promoters of the works, because, whilst it afforded an outlet to those additional lands, and improved them, it relieved the original promoters from a tax which, if it had been founded upon the estimate instead of the reality of the results, would have come to much more.

820. That, then, is a case of additional works carried on without previously obtaining the assent of the proprietors?

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The assents of the proprietors of the district were obtained previously for the original quantity, but not for the additional quantity. Very frequently the proprietors of the additional quantity did assent, as in the case of Mr. King, for instance, who particularly sought for an extension of the drain; we extended the drain to the extent which it would and ought to have been, had the measure been undertaken under ordinary proceedings.

821. We cannot, of course, go into details without local knowledge; but here is the point—the proprietors assented to an outlay of 3,608 *l.*, and you expended, no doubt considering it for their advantage, but without asking their permission, 6,652 *l.* 3 *s.* 11 *d.*?

Which is the limit within which the Act of Parliament empowered us to go.

822. The following letter has been sent to me by one of the proprietors, Mr. Atkinson: "Office of Public Works, Dublin, 11th September 1847. Sir;—In reply to your communication of the 6th instant, relative to the Derryholmes district, I am directed to inform you, that it is not proposed to confer any benefit on the lands of Derryholmes; they will not, therefore, be subject to any taxation in respect of the Drainage Works in the Derryholmes district." He complains that, notwithstanding that letter, he has been subject to the tax; is that true, or not?

Quite true; the explanation is this: I might state it in the very words of the proceedings which took place at the meeting; but if you will allow me to hand in the correspondence, so as to save the time of the Committee, it will accomplish the object. That answer was given upon the application of Mr. Atkinson in the first instance. We had no information before us on the details of these summary proceedings. He writes up to the Board. We find that his name is not entered in the List of Proprietors to be benefited; he is told that it is not proposed to benefit his lands, and, therefore, it is not proposed that he shall be taxed. But when the works come to be executed, the main drain of the whole district alone passes through his lands, and passes through a large mass of rock in his lands, which formed a barrier before, and when the Shannon floods were down, the insufficient river course and body of rock referred to, allowed the floods from the upper country to pass over and injure his lands. The result was, that when the works were executed, he wrote to us a second letter (when he got the award, in which it was proposed to charge him), which letter is here, and we replied to him, stating, "that the Commissioners have referred to their engineer and valuator for information in detail on the subject, and will be prepared to consider the objection at the meeting for the Derryholmes district. In the meantime, with reference to the Board's letter of the 11th September 1847, it is to be remarked, that the observation contained therein is, that 'it is not proposed to confer any benefit on the lands of Derryholmes; they will not, therefore, be subject to any taxation,' &c. &c.; but, owing to the necessity of cutting the river channel to a greater depth, through rocks and hard material, it has been actually found that, notwithstanding the Shannon floods, considerable benefit has been conferred on these lands throughout the greater part of the year, as well as those of a different property on the opposite side of the river, precisely similarly situated, and under such circumstances the Commissioners are bound, by the provisions of the Act of Parliament, in justice to all the proprietors in the district, to rate these lands in proportion to the share of benefit on them. In any event, it would appear to be desirable for you to attend the meeting at Ferbane." The result was, that I met this gentleman on the lands the day before the meeting. He complained of his fences being destroyed by the water having been taken out of the drains, and he complained of being charged for the drainage, though the fact of the water being so taken out of his drains showed the benefit. We have the power given by the Acts that we shall rate all the lands in proportion to the benefit conferred, and if we had not rated that gentleman's lands, your Lordship and many other proprietors in that district would have had to pay for the benefit conferred upon him; whereas we, acting arbitrators between the various parties in that district, when making the award, it was but justice to every one in that district that every one should be rated in precise proportion to the benefit conferred.

823. Do you think, with reference to justice, that it is just to tell a man that works are to be undertaken for which he is to pay nothing whatever, to which works

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works he may have an insentient or a sound objection, no matter which, but regarding which he does not interfere, upon your assurance that no taxation is to be laid upon him, and afterwards to come upon that man for the taxation who objects capriciously, it may be for his pleasure, for his snipe-shooting, or for the embellishment of his place, that he has not water in his drains, or anything else, and to tell him that because you have drained his land without his consent, he is to pay you for what he did not wish you to undertake; is that your notion of justice?

No. It is quite clear that the original letter was wrong, telling him that he was not to be taxed; but it was wrong because of the absence of that amount of information which would be necessary to enable the Board to decide in 416 districts, over the whole of Ireland, in the pressure of the famine. These letters came up to them; they find that this gentleman's name is not in the report, and they tell him that he is not to be charged, as it does not appear he is proposed to be benefited. The provision of the Act of Parliament is, that nevertheless all parties shall be charged in precise proportion to the benefit conferred upon them; and it would be a far greater injustice to the other parties in the district if those lands were not charged.

824. What injustice would it have been to them if they had been taxed for the benefit which they received, they having consented?

Because they would have had to pay what was charged on his lands in addition.

825. What injustice would it be to them if it drained their lands according to the plan proposed, and they had assented to it, these gentlemen not having interfered?

There are many parties who have not assented who are charged; all the dissentient parties are charged, and all the neutral parties are charged.

826. These persons had a true statement of facts made to them, and of the parties who are charged; the majority consented to the work; it might be fair, therefore, that they should be charged for the benefit conferred upon them; but the question of charging this gentleman for the incidental benefit that he receives who had no such statement, does not interfere, surely, with the justice of charging them?

It is a direct benefit to his land, and if his share were not charged to him, it should be charged upon others, who would not enjoy his benefits. If the Committee will allow me, I will hand in the correspondence which took place with Mr. Atkinson on the case of Derryholmes.

The Witness delivers in the same, which is as follows:

Sir, Ashley Park, 6 September 1847, Nenagh.

May I request you will lay before the Commissioners of Public Works, at your earliest convenience, the enclosed letter, containing my dissent to the drainage of the Blackwater River, King's County District of Derryholmes, so far as the townlands of Derryholmes are included, of which I am the proprietor.

I have, &c.

Josh. C. Walker, Esq.
Secretary of Public Works.

G. G. Atkinson.

Gentlemen, Ashley Park, 6 September 1847, Nenagh.

Seeing by your advertisement that you have approved of the plan of Mr. Fitzgerald, C. E., for the drainage of the Blackwater River in the King's County, district of Derryholmes, I beg to state to you my dissent to the above drainage, so far as the townlands of Derryholmes are included, of which I am proprietor, for the following reasons: I have, within a short time, at my own expense, effected the drainage of the Blackwater, to the Shannon, through Derryholmes, by opening three different cuts for the river to the Shannon, which gives ample vent to the river, the fall being very good, thus effecting all the drainage required, and preventing the river from ever flooding the land, unless in one instance, and that cannot be prevented; it is when the Shannon rises to a flood, and overflows its banks; the water of the Shannon then acts as a dam to the river, and consequently it adds to the flood from the Shannon. You will therefore please to observe, that Derryholmes could not be in the slightest degree served by any work done on the river, but must be materially injured by the plan proposed. The Blackwater River, as it at present runs, is the boundary of my property on the north west; and if the river was to be diverted from its ancient course, its former bed would be completely dry, leaving no boundary whatever on that side. Now, for those reasons, I trust that you will not think of taxing, or cutting up, my property

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for the benefit of other persons, or sanction the proposed plan of work, so far as regards Derryholmes. If any further dissent is necessary than this letter, I will feel obliged by being enclosed a form to fill up, as I had application made for one at Ferbane Office, and there was none to be had.

I have, &c.

To the Commissioners
of Public Works, Dublin.

G. G. Atkinson.

Office of Public Works, Dublin,
11 September 1847.

Sir,

In reply to your communication of the 6th instant, relative to the Derryholmes district, I am directed to inform you, that it is not proposed to confer any benefit on the lands of Derryholmes; they will not, therefore, be subject to any taxation in respect of the drainage works in the Derryholmes district.

I am, &c.

G. G. Atkinson, Esq.
Ashley Park, Nenagh.

Jos. C. Walker,
Secretary.

Ashley Park, 2 March 1852.

Gentlemen,

I have to acknowledge the receipt, on yesterday, of your letter, enclosing a schedule of awards of the amount of taxation to be placed on the several proprietors for the drainage of the Blackwater River, in the Derryholmes district, and, to my very great surprise I see my property of Derryholmes set down as charged with 22*l.* annually. Now, gentlemen, as long before this drainage was undertaken, I had at my own private cost drained my lands at Derryholmes from any injury they could receive from the Blackwater River, that could be prevented by further drainage, having cleaned and sunk the bed of the river, and cleaned and sunk the two other ancient sources, thereby giving the river three ample ways through my land to the Shannon; it was therefore prevented from flooding those lands; but the Shannon every year rises and floods all those lands, acting as a dam to the river, and the flood on those lands has not for many years been higher than the present year. It is therefore clear, from the peculiar situation of the place, no further drainage than what had been already effected could be of the slightest use, or in any way increase the value of my property. That being the case, I naturally refused to have anything to do with the further drainage of the Blackwater River. Whereupon the Commissioners of Public Works wrote to me on the 11th September 1847, saying, that the lands of Derryholmes were not to be subject to any taxation in respect of the drainage works in the Derryholmes district, which letter of the 11th September 1847, No. 5,072, I have now before me, and to which I beg to refer you. I therefore must conclude that the placing a tax on those lands has been a mistake. In absence of this information, I beg leave now to point out to your consideration the serious injury that my property at Derryholmes has sustained by the Blackwater drainage, which injury it was signified to me I should be remunerated for when the work was completed, and I should suppose this ought to be a proper time to apply; the Blackwater River, that formerly was the boundary of the Derryholmes property, has been abandoned, and a very wide canal, for a great distance, cut through the centre of a callow meadow, wasting a great deal of land: the old river, the ancient boundary of the property, is in summer, in most places, become no bounds whatever: the various divisions of lands that were divided and bounded by drains, are now in summer all dry, and consequently broken down and spoiled, making a well-divided and bounded farm almost a common: a most advantageous site for a mill, as well as a capability of irrigation, at a very moderate cost, has been destroyed: the accommodation bridge across this new canal has been but partly made, to the great danger of cattle being drowned in attempting to cross. As I suppose Ferbane cannot be less than 30 miles from this place, and as attending there will be inconvenient to me, I will feel obliged by your letting me know if you will correct the mistake you have made in placing a tax upon my land, without requiring me to odge an objection at Ferbane, and attending there. Waiting your reply,

I have, &c.

G. G. Atkinson.

To the Commissioners of Public Works in Ireland.

Notice of Objection.

Gentlemen,

With respect to the drainage of the Blackwater River, I have to object to the award that you have made in your schedule, placing an annual tax of 20 *l.* 15 *s.* 2*d.* on Derryholmes, and 11 *s.* 8 *d.* for first year's maintenance of works.

I object to this tax, in the first place, on the ground that, having originally refused to agree to the drainage of the Blackwater River, I hold the letter of the Commissioners of Public Works to me, saying that Derryholmes would not be subject to any taxation in respect of the drainage works in the Derryholmes district; in the second place, my property has received no benefit from said drainage, it having been previously drained at my own expense as far as was beneficial to it, the land lying on the Shannon, and always subject to the flood of that river; and, thirdly, that it has received permanent and lasting injury by

said

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said drainage, by changing the course of the Blackwater River, thereby destroying the boundary of the property by cutting a wide canal through the centre of my meadows, by destroying in the summer season the boundaries of the different divisions of land, thereby making a common of the place, and in winter having the land flooded higher than usual, also having destroyed a most favourable site for a mill. Gentlemen, on these grounds I claim to be exempted from all taxation in respect of said drainage, and that you will award me such compensation as the severe injuries done to my property requires.

I remain, &c.

To the Commissioners of Public Works,
Drainage Office, Ferbane.

G. G. Atkinson.

Sir, Office of Public Works, 9 March 1852.

I am to acknowledge the receipt of your letter of the 2d instant, and to state, that the Commissioners have referred to their engineer and valuator for information in detail on the subject, and will be prepared to consider the objection at the meeting for the Derryholmes district; in the meantime, with reference to the Board's letter of the 11th September 1847, it is to be remarked, that the observation contained therein is, that "it is not proposed to confer any benefit on the lands of Derryholmes; they will not, therefore, be subject to any taxation," &c. &c.; but, owing to the necessity of cutting the river channel to a greater depth, through rock and hard material, it has been actually found that, notwithstanding the Shannon floods, considerable benefit has been conferred on these lands throughout the greater part of the year, as well as those of a different property on the opposite side of the river, precisely similarly situated; and under such circumstances the Commissioners are bound by the provisions of the Act of Parliament, in justice to all the proprietors in the district, to rate these lands in proportion to the share of benefit conferred on them. In any event it would appear to be desirable for you to attend the meeting at Ferbane.

I am, &c.

G. G. Atkinson, Esq.
Ashley Park, Nenagh.

E. Hornsby,
Secretary.

827. We believe that by this Act, before any work can be undertaken, a meeting of the proprietors must be called?
No, not under this Act, at least not under the provisions for summary proceedings.

828. Can a work be undertaken without a meeting being called of the proprietors, and the requisite number of assents secured?
Certainly; all the works under the summary proceedings were so undertaken; 104 out of 118 districts.

829. Will you point out the clause of the Act which empowers the Board of Works to begin any work in Ireland without any assent of the proprietors?
I did not say so; the question referred to holding a meeting.

830. Will you have the goodness to tell us, before a work can be applied for, how the assents are to be obtained?
By giving them a report.

831. By giving to whom?
Any parties who may be known to the Board to be proprietors.

832. How does the Board know whether any proprietors want any drainage or not?
By a memorial from some of them, or other parties interested in the district.

833. Then the first step is a memorial from certain parties?
Praying for the drainage of their lands.

834. By whom is that memorial signed?
By any party interested; it may be by one or more.

835. How do you ascertain that those parties are interested?
We do not ascertain it at all; we take it for granted; we have no means of knowing it.

836. Then are we to understand you, that when any person applies to the Board of Works to undertake a drainage, you at once assent to that memorial without any inquiry as to the parties who apply for it?
We have no power or means at that stage to inquire on the subject; there is

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a special clause put into the Drainage Act, of the 9th Victoria, chapter 4, saying that we should not inquire into titles.

837. The question put to you is this: you informed us that the first step in the matter was a memorial signed by the parties interested; you were asked how you knew they were interested?

Only by common repute.

838. How do you ascertain the common repute?

We have no means, except that it may be known to some member of the Board, or to some of the engineers; we have no means of knowing it determinately otherwise.

839. Then if any individual writes you a memorial praying for the drainage of any particular district, and stating that he is interested, do you at once proceed?

No; he must bind himself by the memorial to pay the preliminary expenses under the summary proceedings; and with respect to the ordinary proceedings, the test under the first Act was, that he was obliged to deposit the funds which were necessary for the preliminary proceedings.

840. Will you define what is the practice when a memorial signed by any person professing to be interested is presented to the Board for drainge?

Unless we are apprised to the contrary, that he is not interested, the practice is, that we proceed to order an examination or survey to be made, or we did rather do so; we do not undertake any new measures at present.

841. You at once proceeded to make a survey?

Yes, an inquiry; we directed the engineer to do so.

842. Upon whom does the expense of that survey fall?

Upon the applicants, if the work does not go on.

843. How do you ascertain the solvency of the applicant?

Only by repute; we have no inquiry; we hold no investigation; there is scarcely a member of the Board, Mr. Griffith, or myself, or any other, who is not pretty well acquainted with the general properties in Ireland. We know very well that Mr. So-and-so, or Lord So-and-so, has a property in that part of the country, and there are generally a great number of names to the memorial, some of which are quite sufficient to cover the fact of solvency.

844. Do you mean, then, to say, that in an arbitrary manner the Board decide whether that memorial shall be answered, or not answered?

We do decide it so: whether it is arbitrary or not, I am not aware.

845. We do not mean to say in a despotic manner; but do you at once say, We will, or we will not answer this memorial, without any inquiry whatever; is that your practice?

If we had any doubt, we should inquire; but we have so much information with reference to the whole of Ireland generally, in the various departments of the Board, that we are quite aware whether the parties are such as to warrant us in making the preliminary inquiries.

846. Then you issue an order for the survey: who pays the expense in the first instance?

Provision was made by the 9th Vict. c. 4, for funds for the express purpose of those summary proceedings, which is the case under consideration, in order to afford relief by employment. There are two classes, as I explained on the last day, the summary and the ordinary. Under the ordinary proceedings we required the deposit of the money, and in aid of that, the Government were empowered, by the 9th Vict. c. 4, to advance the sum of 5,000 *l.* a year to defray the cost of preliminary proceedings. Under the summary proceedings the Government provided the whole cost of the preliminary proceedings, in order to facilitate the operation of the law as a means of relief for the distressed during the famine.

847. Then the survey being made, what is the next step taken?

To consider the report, and to have it printed, and issued to all the persons who shall be named by the engineer in the very cursory examination which he makes as the parties whose lands are to be drained. The report is then sent, with

with a circular, to the proprietors, stating, "Here is the report" (I am talking of what is done under the summary proceedings); "if you approve of the measure, here is the form of assent; by forwarding it to the Board of Works within three weeks, it will be attended to:" and there was a power of extending the time, I think, for another fortnight.

848. Under the ordinary proceedings, what is the course?
Under the ordinary proceedings a meeting is held.

849. How is that meeting summoned?
By public advertisement, and by notices posted, I think, in the district, and circulars to the proprietors, as well as I recollect the detail.

850. Are the assents obtained from the parties?
The parties may give their assents, or not, as they please. We hear at the meeting any objections that may be made to the project.

851. Do you send down an engineer?
Yes, and one of the Commissioners always attends and presides at a meeting of that kind. The meeting is held; all the matters connected with the project are discussed; and if the proprietors conceive that there is anything to object to, they bring forward their points of objection; it is finally settled, the plans are signed, the meeting breaks up, and the Commissioners then remain quiescent until the majority of the parties send in their assents.

852. What means have you of ascertaining the area of each proprietor?
It is ascertained through the Ordnance Survey by the surveyor, who is sent round. Under the first Act it was ascertained with very great deliberation and very great detail when making the second survey required by that Act.

853. We are talking of the first Act, the Ordnance Survey?
The ordinary proceedings are not under the first Act now.

854. We are talking of ordinary measures?
Ordinary measures are now under the 9th Vict. c. 4, and have been since 1846, and all the ordinary proceedings have been very much curtailed from what they were under the first Act.

855. In ordinary proceedings how would you ascertain the area of each proprietor?
By the Ordnance Survey. The engineer ascertains the amount under flood or injury from water, and draws it in, or plots it down on the plan.

856. How do you proceed under summary proceedings?
He makes a sort of cursory survey; he sketches in the flooded lands; he frequently examined the district when it was under flood, and very frequently never saw the drains at all, but took the general length of the river course from the Ordnance Survey, and such branches as he could find were required to effect the drainage, in accordance with the directions and intentions of the provisions for summary proceedings.

857. How was the assent of the proprietors obtained in that case?
In the same way; the reputed proprietors, and the extent of their lands, as far as it could be ascertained, with the aid of the Ordnance Survey (without the Ordnance Survey we never could have got on), were put down in this cursory way. We seldom could make any detailed examination for summary proceedings, and the report was sent to the parties very frequently without any plan, or any further detail, merely that there was a district which contained, we believed, so many acres; that so and-so were reputed to be proprietors, and that we had been applied to, under the provisions for summary proceedings, to afford relief by employment.

858. Will you state by what clauses of the Act of Parliament the summary proceeding is carried out in the way which you state?
The 9th of Victoria, c. 4, s. 45 to 51, inclusive.

859. Will you have the goodness to state what particular clause in that Act enables you to resort to the summary proceeding which you have just detailed for procuring assents?
One of those sections, the 48th section.

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860. Will you have the goodness to state the words of the section?

"Be it enacted, that in and by such notice as last aforesaid, all proprietors (as defined under the said first-recited Act) of such lands so to be drained or improved, shall be called upon to furnish in writing, either by themselves or their known agents, to the said Commissioners, at their office in Dublin, or to some person by the said Commissioners authorized, their assent to, or dissent from, the proposed drainage or improvement, on or before a day to be named in such notice, not less than three weeks from the day on which such report shall have been lodged as aforesaid; and if before or at the expiration of the said period the said Commissioners shall ascertain that the assent in writing of the proprietors (as defined in the said first-recited Act, with the consent of the tenants, if any, as by the said Act required in that behalf) "—

861. To what does that refer, "the first-recited Act"?

The 5th & 6th Vict. c. 89, I apprehend; "of more than one-half in extent of the lands so to be drained or improved, shall have been given to the said proposed works, the said Commissioners, if they shall so think fit, shall cause to be published in the Dublin Gazette, and also in the manner herein as to such notice last aforesaid directed, a final notice, stating, that all the preliminaries required by the provisions for summary proceedings under this Act have been complied with."

862. Will you point out the mode of obtaining the assent under the 5th & 6th Victoria, "the said recited Act"?

There are a great number of clauses referring to that, I think.

863. "The assent in writing as defined"?

I think it is the 17th section of the 5th & 6th Victoria.

864. "As defined in the said first-recited Act"?

That was the class of titles or tenures which would constitute proprietorship.

865. No; the assents as defined by that Act?

I think it meant the proprietors as defined; your Lordship will find it is just after the word "proprietors". It was the proprietors who were defined, and that was by the 23d section of the 5th & 6th Vict. c. 89. I may state briefly that it defined all persons having the fee, or life estate in the fee, or a lease for ever. The lowest in the scale of proprietorship were people having leases for ever, or having leases for 40 years' unexpired term.

866. Do you make any inquiry as to who are the proprietors?

No, we make no special inquiry; we take the reputed proprietors as known in the country; the engineer asks the tenant whom he pays his rent to, and so forth, and ascertains in this way, by his inquiries on the spot, which he is instructed by our circulars to make, who are the proprietors, and the words of the Act of Parliament are, that the assent of the parties who shall be reputed to be the proprietors shall be binding and conclusive, I think.

867. Perhaps you will point out those words?

I think it is in the second Act, the 8th & 9th Vict., that the word "reputed" is introduced. It is in the definition clause of the 8th & 9th Vict. c. 69, "and the word 'proprietor' in the said recited Act and this Act, in addition to the meanings in the said recited Act applied to it, shall also mean the reputed proprietor."

868. That is a subsequent Act?

It is the middle Act, the second Act in the order in the book which your Lordship has.

869. Then you conceive that you had no right to charge any person who was not a reputed proprietor under those circumstances?

It is the lands which are charged.

870. The lands of any individual contained in the drainage; you conceive that you had no right to charge any person who was not a reputed proprietor of lands contained in the original drainage?

We conceived that we had a right to charge the lands to whomsoever they belonged, that derived benefit from the drainage.

871. If

871. If a majority of the reputed proprietors had given in their assents?
Yes.

872. But not beyond the area of those so reputed proprietors?
Yes; we have been advised otherwise altogether; it is defined, I think, by the 9th Vict. c. 4.

873. What is the express provision?
The express provision is, that nothing but the award shall determine the extent of the lands which are to be rated for the benefit conferred, and your Lordships will see that it is consistent with the equity of the case and frame of the whole Act.

874. What we wish to obtain are the facts: the only facts which we have had yet are, that under the ordinary proceedings, you called a meeting of the proprietors to assent or dissent, and that if more than one-half of those proprietors assented upon the ordinary meeting, you proceeded with the work. Then you said that under the summary proceedings you dispensed with the meeting, and you took the assent of the reputed proprietors. What do you mean by the "reputed proprietors;" do you mean the reputed proprietors of the district which is contained in the survey, or do you mean to carry it to any greater extent?
The reputed proprietors who were known to the Board by means of the statement in the report laid before the Board.

875. Then in the case of parties that were not so reputed proprietors, it was the practice of the Board not to charge them with the expense of any drainage. Are we to understand, in point of fact, that the power of the Board only extended over those reputed proprietors?
It extended to all the lands which were benefited by the drainage.

876. It extended only to those reputed proprietors of the land that was contained in that survey?
The majority was decided by that test, but the charging or rating for the benefit extended to the lands which were absolutely benefited by the works carried out.

877. Will you have the goodness to show us the clause by which you could charge any proprietors that were not included in that survey?
It is the 18th section of the 9th Vict. c. 4, as well as I recollect; though I had the framing of these Acts, as stated by the noble Lord, I wish to put it before your Lordships that I am not a lawyer; I have never been called to the bar: I framed the substance of them in an engineering point of view; they have been put into legal form by the law officers of the Crown. It is the 18th section of the 9th Vict. c. 4, as far as my recollection serves me, that bears upon the point.

878. Will you have the goodness to read it?
"Be it enacted, that no error, misdescription, misnomer, misstatement or omission in any of the schedules, maps, plans, sections, estimates, declarations, or memorandum of declaration, or notices by the said recited Acts or this Act required to be prepared, lodged, registered or given by the said Commissioners, shall invalidate the same or any of them, or any of the proceedings under the said recited Acts or this Act; and from and after the publication of the final notice in and by the said first-recited Act or this Act directed to be given previously to the commencement of any works by the said Commissioners, no error or omission whatever in any of the proceedings preliminary to the issuing of such final notice shall be deemed to affect or invalidate any such proceedings, or the powers and authorities of the said Commissioners, or prevent them from proceeding with the execution of the works in their opinion necessary, and for that purpose effecting any purchases, and doing all matters and things requisite for carrying fully into effect any such works, or the provisions of said recited Acts or this Act in relation thereto, nor to affect or invalidate any award to be made by the said Commissioners in respect of any of the lands drained or improved, or affected by such works, nor the extent of land or other property to become liable for the repayment of the cost of the works, and all expenses incidental thereto," &c. That is the point which I conceive, with great humility, not being a lawyer, is applicable.

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879. The last three lines?
Yes.

880. Then upon those words, the Board of Works deemed themselves authorized to extend the area of drainage to any extent they might think fit; is that what we are to understand?
No; we extended the area to nothing but those lands to which benefit would be conferred in the ordinary cases (there is a marked distinction between them) by the works that were originally proposed to drain the lands which were set forth in the original report. If these works gave an outlet for the drainage and improvement of other lands, in justice to all the parties in the district, those lands, which were clearly omitted in error, were rated. In the summary proceedings, there was no such limitation at all, and the next and adopted limitation depended upon what would have constituted an ordinary case, had it been taken up under ordinary proceedings.

881. Then, upon those words, the Board of Works deemed themselves authorized to extend the area of drainage to any extent they might think fit, provided benefit was derived by those lands; is that so?
Yes, as I explained more fully in my answer.

882. Was that without reference to the assents or dissents which you had previously received?
In the ordinary cases, yes; in the summary cases, except the expenditure was within 3*l.* an acre, the matter was brought forward again, and we had the assents frequently of the included proprietors themselves, at least the whole district was brought before the proprietors in the supplemental reports, and we had the second assents determined by the included properties.

883. In the ordinary cases, then, we understand that the Board of Works claimed the right of extending the area indefinitely, provided benefit was done to those lands?
Not indefinitely; we conceived it to be a duty, and no right; we extended it to the extent to which lands were benefited by the works proposed for the ordinary district, and the increased quantity of lands are small.

884. But either with or without the consent of the proprietors?
We asked no second assents in ordinary cases.

885. Then that is without consent?
Yes.

886. Are we to understand, then, that this indefinite extent was to include the land of proprietors who had not been consulted in the first instance?
Yes; it is not indefinite; it is very small in amount; but I am answering an abstract question; it was very small in amount; but if those lands were omitted by the neglect or otherwise of the engineer or valuator, who examined the lands in the first instance, we conceived it to be our bounden duty, under the provisions of the Act of Parliament, when those lands were benefited, to charge them.

887. We are not inquiring as to the amount, but whether you consider that you had a right to charge the lands of proprietors who had not been consulted in the first instance?
Yes, if benefited.

888. Will you point out the portion of the Act which gives you that power?
That section which I have quoted, taken in conjunction with the 8th, and the general provisions of the Act.

889. That is your interpretation of the Act?
Yes.

890. The original safeguard to the proprietors you conceive to have been that more than one-half were to have given their assent?
Yes.

891. Supposing the case of a proprietor who had not been consulted in the first instance, who, on the contrary, had been told by the Board that the operations were in no respect to affect his lands; that, for instance, those were not lands which

which would be benefited by you; supposing he was to abstain from taking any part in consequence of such assurance from you; and we will also suppose the case that there was only a bare majority by his abstinence from taking such part; should you still consider that those proceedings were regular according to the Act?

We should.

892. Will you explain on what grounds you so consider?

Because we take the steps prescribed by law to ascertain what constitutes the district. The same law provides that by no laches of any person employed under us, or by ourselves, shall injustice be done to any one, or the security of money affected; and the result has been that at some of the award meetings where lands were accidentally omitted of that very class which were not included before, the proprietors in the district have objected, because they were not included in the draft award. In the instance brought under your Lordships' notice to-day by the noble Chairman, the drain went through the lands of the proprietor, and he knew that; and hence he wrote to us on the subject.

893. We are not supposing the case of laches on the part of a proprietor, or even your own, but we are supposing a case where the proprietor abstained in consequence of a positive assurance on your part that his lands would not be affected in any respect; that he would not, therefore, come within the provisions of the Act, as a proprietor of lands to be drained or improved; still you consider yourself justified in subsequently charging that gentleman's lands?

Yes; the final notice is conclusive of preliminaries; and in the administration of the law where I acted in the capacity of judge between the parties, I gave that decision, and I believe I was right, and borne out.

894. In the Derryholmes case, was he area subsequently included in the Derryholmes drainage, within the outer circle of the district reported, or without it?

It was a much greater area.

895. It was not a piece left out of the centre by laches?

It was parts left out at both ends, at the extremities, and along the verge of the lands included.

896. That is to say, those lands were in the exterior circle?

They were within the Catchment Basin of the Derryholmes district.

897. They were without the area, for which assents were originally taken; is that so?

It is.

898. Having stated that you thought that you were authorized by the Act of Parliament to take this step, will you have the goodness to state to the Committee, when the report of the assents* was made to the Board of Works, what investigation that report underwent from the Board?

None, but to be read over, and to see from the report of the engineer, whether there was a probability that the advantage would be commensurate with the expense.

899. By whom was that read over?

I cannot state precisely; the duty would naturally devolve upon me; but if it happened in the year 1847 (I think it did), it might have happened at some of the times when I was here attending on Parliament; I cannot say who read it over.

900. What is the practice with the Board?

The practice is for every report of the kind to be read over first by the principal engineer; and secondly, to be brought before me, and read by me.

901. Not

* In reading over this evidence, I find that this question refers to the "assents," whereas I understood it to refer to the engineering report on the drainage, as the eight following answers show. I, therefore, now explain, that the assents are, when received, forwarded to the Board's solicitor for examination, and he requires from each proprietor a brief statement of his tenure or title before he passes the assents. When approved by the solicitor, the assents are adopted as sufficient by the Board.—*W. T. Mulvany.*

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901. Not by the Board generally?
No, certainly not.

902. Then you are the sole responsible person for the adoption of such a measure?
No; the whole Board are responsible; but it is my departmental duty to examine it.

903. The reports do not, in point of fact, come before the Board generally, but are confined to you, or whoever takes that departmental duty?
Two of our Board are necessary to constitute a quorum, and the document must be signed by two; it is generally signed by myself and the Chairman; the Chairman and myself are made responsible for the duties.

904. The Chairman signs, we presume, upon the supposition that you have inquired?
That is generally so, but not always, as in the report of Kilbeggan; for instance, Sir John Burgoyne read that; and all the early reports, until we got them settled, were with the Board: the principles were all considered by every member of the Board.

905. But latterly it rested entirely with you, or whoever was in your position in the Board; is that so?
It is substantially so.

906. Then, having so given your assent, and obtained the signature of another member of the Board, what was the next step towards obtaining the money?
Of which class of cases are your Lordships speaking, for the operations were different?

907. We will have both cases; first, under ordinary cases, and then under summary?
Under ordinary cases before the famine, we advertised for loans, and endeavoured to obtain them from private parties; failing that, we applied to the Government.

908. To what parties of the Government did you apply?
To the Treasury.

909. What sort of report did you make to them of the case; was there a formal application?
There was a printed form of application, stating that in such and such a case the assents had been received, the preliminaries completed, and that the estimated cost was so and so, and that a loan was required for it; there are a great number of those communications in the correspondence before your Lordships.

910. Did the Board of Works state that they had examined into these reports?
In the very early cases we did; in the later, we did not.

911. When did that practice change?
With the famine, I should think.

912. At the famine you abandoned giving any statement of the judgment of the Board upon the case; is that so?
We did no more than send a formal application for a loan for that district.

913. You gave no certificate to the Treasury of your approval of the works?
That approval is attached to the end of each of the reports under the summary proceedings. All those reports, I believe, were forwarded to the Treasury; I rather think they have been.

914. Upon what grounds did you make this sort of certificate, which we find in the Ballynahown case, that having considered a report of your civil engineer, in pursuance of the statute in that case made and provided, you certified that it appeared to your satisfaction, and you were of opinion that the benefit to result from the works proposed to be executed would be commensurate with the amount of the estimated cost of such works; upon what authority did you do that, simply upon that report?
Upon that report, and our general knowledge of such cases.

915. In

915. In this estimate as to Ballynahown, the annual increased value of the lands is stated at 500*l.* per annum; how did Mr. Samuel U. Roberts, civil engineer, set about ascertaining the increased value of those lands at 500*l.* per annum?

In a very cursory way indeed.

916. What was the course pursued under the ordinary proceedings?

In the ordinary proceedings under the first Act we were obliged to write a letter after the cursory survey was made, to state that we approved of the measure, and then the parties were to deposit the money, and go into the second or very detailed survey and valuation; but under the ordinary proceedings as amended by the 9th Vict. c. 4, I think no such document is required, nor is there more than one survey necessary.

917. Under what section?

I think it is under the 8th section.

918. The question refers to an application for money; that section was to the survey of lands?

Yes, it is what was required to be done; and I think that that letter which I spoke of was not required under that section, the letter approving of the cursory survey. Then when we wrote to the Treasury, as well as my recollection serves, we stated that the preliminary proceedings had been complied with in that case.

919. In the ordinary proceedings?

In the ordinary and the summary of late dates. I have explained already that in the early period we gave a much more detailed report, as in the case of the Blackwater, for instance, in which we entered into the circumstances and the number of the proprietors. In page 5 of the general Correspondence laid before your Lordships' House, is a full letter of ours applying for a loan to the Treasury for the Blackwater. That was the routine in the first instance, when we applied to the Treasury.

920. When was that routine abandoned?

About the period of the famine, I presume, after the passing of the 9th Vict. c. 4.

921. Did we understand you rightly to say, that at the time of the famine that was confined to the summary proceedings; is that so?

No, the ordinary proceedings also.

922. Under what authority did you alter that letter to the Treasury?

There was no authority requiring it; we did it for explanation, because it was the first class of these drainage cases.

923. You say that you ceased to do that at the commencement of the famine; under what authority did you cease to do that?

Under our own authority; there was no authority requiring it originally, and, therefore, we acted upon our own information, and under the authority of a Treasury Minute of the 1st December 1846, which stated, that loans would be sanctioned for the arterial drainages at 4 per cent.

924. Did that give you an authority to alter the form of the report which you made to the Treasury?

It gave no authority one way or the other; it simply said that their Lordships would be prepared to sanction loans, as well as I recollect the words, for this service at 4 per cent.

925. Then we must repeat the question, under what authority did you alter the form of your report to the Treasury?

I stated under our own authority.

926. You had no instructions for so doing?

We have no instructions for either course.

927. Did the Treasury make any objection to that alteration?

None whatever.

928. They at once adopted your new mode of reporting?

Our new mode of applying for loans. There is a formal course prescribed between

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between us and the Treasury, which is complied with in every case; that formal course has never been departed from.

929. What is the formal course?

I have not the documents here. There is a special form prepared with information for every loan that is required. I have not it in London either; it is in the Finance Department.

930. Is it not to be found in that book?

I do not think it is.

931. Is it not that which you adopted in the Blackwater case?

No, that is an additional letter, a preliminary letter, apprizing their Lordships of the fact, that in this the first case of drainage in Ireland we had failed in getting private funds, and stating general principles, and asking their Lordships to approve of the loan, and proposing to send the necessary form prescribed to get their sanction. That form has never been altered that I am aware of.

932. Do you say that that preliminary letter prescribes the form?

No.

933. Where can we find that form?

Your Lordships can get it over from the Board of Works, or from the Treasury.

934. By whom is it prescribed?

By internal arrangements between the Treasury and the Board of Works.

935. You state that this was the first time you applied for the money in that way?

The Board of Works were the parties who lent to the Drainage Commissioners at that time. The Board of Works had a prescribed form for every loan settled at a very early date, I presume from 1833, upon which every loan was to be obtained. The Board of Works, as Drainage Commissioners—therefore, previously to the Consolidation Act in 1846—applied for every loan in that prescribed form.

936. To whom?

To the Treasury; and this being the first of the drainage loans, for which they applied, it required a special letter, which was accordingly written, showing the nature of the security, the novelty of the measure, and the failure of obtaining money in any other way. The Act of Parliament was afterwards amended, and the security improved; it was made a first charge, and still the same form of applying for a loan remains; but those preliminary letters were, to a great extent, dispensed with.

937. We have understood you to state, that the preliminary letters continued until the famine; is that so?

I think they did in any cases where we had to apply; I only recollect the Borrisokane as another case where we applied, because we got private funds shortly afterwards. I cannot charge my memory with every case in which we have applied.

938. You can charge your memory with the general practice of the Board, can you not?

The general practice I am aware after the famine has been, to send in merely a formal application.

939. What was it before the famine; you have stated several times that that form continued till the famine?

The form remains the same.

940. That preliminary letter continued the same until the famine?

I think so, varying with the circumstances.

941. By what authority was it discontinued; was it entirely the act of the Board of Works, or did the Treasury make any objection?

The Treasury made no objection. I believe it was entirely the act of the Board of Works.

942. Who

942. Who was at the head of the Board of Works at that time?
Sir John Burgoyne, I think, continued until 1845; I am not quite sure; and then Colonel Jones was chairman until 1850, and Mr. Griffith since.

943. From the time of Colonel Jones being chairman of the Board of Works, has the mode of applying to the Treasury gone on up to this time without any further specification than is contained in the form?
I think so, except whatever letters may be in this Correspondence. I believe every document of the kind is in it, and there are several applying for loans. There is one, I think, about Lough Neagh in it, and statements were furnished occasionally. I find in page 94, a statement of the state of our loan fund, and how much was required for drainage, in large amounts. Then the particular districts were set forward; for instance, in pages 86 and 87, there is a schedule where we apply for additional loans: "We beg leave to submit herewith a list of drainage projects, carried on pursuant to the provisions of the Acts 5 & 6 Vict. c. 89, 8 & 9 Vict. c. 69, and 9 Vict. c. 4., amounting together to the sum of 285,764*l.* 11*s.*, and for which loans have been sanctioned by your Lordships. On these projects, issues have been made to the amount of 25,004 *l.*, and we would now request your Lordships to direct the further advances to the amount of 35,814*l.* 11*s.* We beg to apprize your Lordships, that this amount is now required for the due carrying on of the respective projects. At the same time we are obliged to draw your Lordships' attention to the balance of the loan funds now in the hands of the Commissioners, for the reduction of the national debt, for the purposes of all loans, and which is now only 10,802 *l.* 16 *s.*, being barely sufficient for the necessary issues upon loans already sanctioned, or to be made for the ordinary works to the 5th of July next, when another sum of 15,000 *l.* will be added to the funds."

944. We have now another document introduced, namely, the mode of sanctioning the loan on the part of the Treasury; let us have that. It appears by what you have just read, that they sanctioned the loan, and that some time afterwards you applied for the money; will you let us have the form in which they sanctioned the loan?
There are prescribed forms for that purpose.

945. Will you have the goodness to put them in?
I am not aware that I have them here.

946. They must have come before you?
Certainly; it is a Treasury Minute, or a special printed form, but I have not it before me here.

947. You can procure one?
I can procure one, of course.

948. You can get it at the Treasury?
Yes.

949. Then you drew for the money as you wanted it?
We get a sanction for each district, and we draw for money to the extent of that sanction; when that sanction has expired, we are required to go for another sanction.

950. As you drew for the money for each district, did you make a distinct application of the money to each district, or did you conceive yourselves authorized to apply it generally for the purposes of drainage?
Your Lordships will perceive in the correspondence given here, that we frequently did overdraw the amounts, and applied them as a general fund, for which we were reprimanded on some occasions by the Treasury; but the pressure was so great, that we frequently in the pause between getting issues of money were obliged to do so, or stop the works.

951. Since the famine has been over, do you still continue upon the same course?
No, it has got into a very regular train. There may be cases, and there are cases within the circle of my own knowledge of overdrawing, but they are to small amounts, and they are still within the general balance available in the bank.

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952. Then you still conceive yourself authorized to apply the balance in the bank of the loan fund for any drainage works that may be going on?
We are not authorized.

953. But you do so?
We have sometimes done so, and the circumstances are expressly stated here under which we have done so.

954. What check had the Treasury over any expenditure that you might choose to incur in any works; had they any, or what check?
No check, except the amount of the accounts as they went in.

955. You have stated that you sent in to the Treasury a charge of a given amount for a given work; was any further application made to the Treasury before the amount of that estimate was exceeded?
The rule was, that as soon as we approached the limit, a fresh application should be made.

956. Was that rule observed?
Not always, from the very fact that I explain of having drawn from the general sum available for drainage; nay, even more, in the famine the general Drainage Account itself was overdrawn to a certain amount; I remember that very well, and that is stated in this correspondence.

957. We are talking now of the time since the pressure of the famine was over; the same system has been going on?
No, not the same system; there was a very regular and very sound system laid down with great care, and under great control; an accountant, a Commissariat officer, was sent over to manage the whole of the accounts of the Board of Works on a different system from that on which they were managed before, and the Chairman and accountant were made responsible.

958. Will you be so good as to state when that was?
I think it was in 1846, but I cannot be certain.

959. That was before the famine?
In 1846 it began. The change, I think, did not take place until 1847 or 1848; in January 1848 I think the new system of accounts was introduced. The pressure did not cease with us till 1849 and 1850. In 1848, I think the new system of accounts and regulations was established.

960. Since 1848 or 1849, has the rule of the Treasury been strictly adhered to by your Board or not?
Not very strictly, but very nearly so; for instance, where we are nearly approaching the completion of a district, we do not apply for the last sum till we apply for the amount of pounds, shillings and pence which will close that account. It is a very small matter in which it is exceeded, and it is done so as a matter of convenience, to square the accounts completely.

961. Is any form of accounts sent to the Treasury of the expenditure, or to the Audit Office?
All our accounts go to the Audit Office.

962. But do they go to the Treasury?
There is a monthly balance of the whole of our accounts, which goes to the Treasury, I think.

963. But no account of the expenditure upon the estimates of the separate works?
No, I think not, in the abstract, which states the balance in the bank, and so forth, for the drainage, and for every service, and is sent to the Treasury once a month.

964. Have the Treasury ever required such an account as is referred to in the former question?
Yes, there are several such in the general Correspondence laid before The House, and the very last of them is in page 353, and following; all these Tables are accounts called for by the Treasury.

965. Were these returned as a whole, as a Parliamentary Return, or were they returned separately?

Separately,

Separately, as your Lordship sees in those Tables, and not as a Parliamentary Return.

966. Were they returned separately, or in a Table?
Just as your Lordship sees it there.

967. Then they were all returned together?
That is a copy of the document which was sent.

968. There was only one document sent; they were all included in this; there was not a separate return sent to the Treasury of the completion of each work?
I do not understand your Lordship; they called for an account of the state of every district in Ireland at that date.

969. Did they call for an account of the expenditure upon any particular work before the completion of that work?
Yes, repeatedly. In those very Tables there is the expenditure on various works before their completion.

970. But did they call for those at once?
At once.

971. Then they did not call for them separately?
They repeatedly called upon us for an account of all the works in Ireland, of drainage, specifying each, the amount expended upon it, the probable amount to finish it, and so forth.

972. Did they call upon you for the expenditure upon any one given work by itself?
I should think that they have done so on occasions of complaints or matters coming before them, but I cannot charge my memory with particular instances.

973. As a matter of course, you did not send them?
As a matter of course, I think, we did not send special accounts, except at the end of the year, when we send all the accounts, and have fully reported all causes of excess, we sending our general accounts every month of the state of our whole works.

974. We are talking about specific works; have you sent an account of specific works to the Treasury?
Every year we do.

975. Of specific works?
Of specific works; of each work; that is to say, each district. One district extending over 72 miles, contains a great number of works; but we call each district one work.

976. The progress of each work is separately stated?
It is.

977. Is this the form in which the account is rendered to the Audit Office?
No, I think not.

978. What is the form in which the account is rendered to the Audit Office?
I do not know; I have not the details of the accounts sent to the Audit Office; it is not my department.

979. Who has the details?
Our accountant, and the Audit Board have them here, of course.

980. Then you have no knowledge at all of the accounts?
I have a very general knowledge of them all, but I have not a particular knowledge, because it is not my department; it belongs to the chairman and the accountant.

981. Your department is to sanction expenditure?
And to have the works executed, and to administer the law.

982. What check is there upon any expenditure which you may demand on any given work?
I do not understand the question.

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983. If you sanction an expenditure of 2,944*l.*, what check is there upon you that you will not expend 2,000*l.* more than that?

There is no check but the necessities of the case; I do not expend it, I authorise it; I sanction it first, and the chairman afterwards.

984. You sanction the expenditure of 2,944*l.*, and the work costs 5,000*l.*; we want to know under what sanction that increased expenditure takes place?

The report is made by the engineer; he is bound, generally speaking, to make a report of every cause of excess that is brought before me; it is referred by me to our principal engineer; it is considered by him; we receive his report upon it; I consider it then, and approve of it if I so think fit, or refuse it, or amend it, and then the regulation is, that it shall be also approved by the chairman. Since the year 1848-49, I think that has been the regulation; during the famine, there was none such.

985. How is the money obtained?

It was obtained by advertisements for loans first.

986. That is under the ordinary proceedings?

No, under either; we obtained a great quantity of private money for summary proceedings; for both cases, more than 200,000*l.* Everything connected with the obtaining of private money was done at the Board as a board operation.

987. Presuming that the work in question has exceeded the amount, have you then attempted to raise money by debentures?

There are many instances in which we have done so. Of late years we have been prohibited from borrowing any private money, except for whole cases.

988. When were you so prohibited?

There is a letter, of which I cannot give the date. When we approve of a district, and resolve that it shall be executed, we, at the present time, apply to the Treasury to sanction a loan for the amount.

989. Who apply; the Board of Works?

The Board of Works; it becomes the Board's business.

990. Under your advice?

Yes.

991. You have just brought in another element, namely, the borrowing money upon debenture; do you do that now?

No, except in cases where the whole of a district is to be executed out of private money. There was a special arrangement made by the Treasury which is in that Correspondence.

992. We understand that you do not borrow money upon debentures where the Treasury makes any advance?

There is no such rule; there is a rule of the Treasury that we shall commence no more works in Ireland unless the whole of the money be provided by private parties.

993. The Treasury will not advance any more?

Those are their instructions to us.

994. When were those instructions given. There is the statement in a letter from the Commissioners of the 16th August 1850, that no additional loan from private sources will be entertained after the 31st of December 1849?

There are several communications upon the subject, and it was reduced to this in substance, that we were not to commence any new work unless we got the whole of the money secured from private parties; but there is no such rule as the noble Lord has referred to, that we shall not borrow on debentures.

995. For the completion of the several arterial works?

I think not, because in the first minute that was made placing 800,000*l.* at the disposal of the Board for the completion of the works, it is expressly stated in the Treasury Minute, that about 68,000*l.* of that was to be made up partly of private funds and partly of public, from our loan fund.

996. These are the words in a letter of the Commissioners of Public Works to Sir Charles Trevelyan of the 16th of August 1850: "I am further to state, that

that as there are funds available at present from various sources equal to the completion of the several arterial drainage works which had been commenced previously to the 31st December 1849, no additional loan from private sources will be entertained until the entire sum required for the completion of any work of arterial drainage shall have been guaranteed to the Board by persons respecting whose solvency they entertain no doubt?"

Yes, that had reference to the new cases which I have spoken of. We have commenced no new cases of the kind. We entered upon one, the case of the Quoile. It may be very difficult for me to explain, but we have gone so far as that we have taken one of the debentures in that very case, because the final notice was issued, and the agreement for the loan of the money was completed. There is nothing of the kind that does not admit of explanation; it may be very difficult to explain it all very briefly, but I am answering your Lordship's question as well as I can.

997. You will have the goodness once more to come back to the mode in which you get the money. You have stated, that you make an application under a given form to the Treasury for money. We understand that you have not been allowed to raise money on debenture where money had already been advanced by the Treasury upon any given work; are we right?

I think we have not done so since 1850. I am not quite certain whether there are words exactly prohibitory to the extent to which your Lordship's question goes?

998. What is the practice?

The practice is, that we receive now no more private money, except we are going to commence an entirely new case.

999. How do you get the additional money from the Treasury that you want, when you have exceeded your estimate?

We send forward a form of application, and in such cases where it is additional to any estimate that we have already furnished to the Treasury, we send a special letter with it; if it is within the limits of any estimate we have already furnished to the Treasury, such as January 1850, or October 1851, we state it as within the limits of that estimate; if it is an excess, we explain the case to the Treasury. I remember one case in this book—the case of the Strokestown district, when there was an excess of more than 8,000*l.* required, we stated the circumstances to the Treasury of what led to the excess. Your Lordships will find, in page 361—I cannot remember whether the letter is in the book—but in the very bottom note of that page a reference is made to the question.

1000. We should be very glad to see what species of report you made to the Treasury. It is very true you say, "Of this excess, 8,500*l.* was sanctioned by Treasury upon Board's Letter, 13th August last; residue is chiefly increased interest and mill power, for which proprietors are bound to repay." That is all the information, which amounts to no information at all?

I only say there is a reference to the fact, and of course there was a Board's letter; where that is I do not know; there was a Board's letter explaining it.

1001. The Board's letter was written by you, was not it?

I am not aware, it is very probable it was.

1002. But if it is in your particular department, by whom could it have been written?

I rather think it was written by the chairman, Mr. Griffith.

1003. Then it must have been upon instructions given by you?

Yes; we found out the causes of excess, and I sent the engineer to examine the case; he made a report upon the causes of excess, and a special letter, I believe, in this identical case, was forwarded, without my seeing it. I am not certain at all; but my impression is, that it was forwarded by the chairman.

1004. Mr. Griffith is the present chairman?

He is.

1005. Was it in his time?

Yes.

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1006. And upon the statement which your engineer made without your seeing it?

No; I had a conference with the chairman before I left town. My duties very often take me from town to hold award meetings, and to perform a multitude of other duties connected with these drainages in the country. On any matter of this kind there is a conference between the chairman and myself, or sometimes the whole Board and myself; the matter is discussed, and we then resolve, before we approve of it, that we will send down our principal engineer to have it examined into, and having examined into it, his report is brought up to the chairman; the matter having been previously considered by us conjointly, he, in my absence, acts upon it. If I were there, it would be my duty to frame the letter, which would be afterwards approved of by him, and sent by the secretary.

1007. Is that report of your engineer sent to the Treasury?

I cannot state. I think we state the substance of it, or the facts; we get the report for our own information.

1008. You do state the facts?

I think so.

1009. Then that is a different kind of letter from that which you send in ordinary cases?

Clearly; it is the cause of excess, where we explain the excess and the difficulties, and the circumstances which have led to it.

1010. How long have you adopted that practice again; you stated that you had left it off when the famine began; how long have you adopted it again?

What I stated we left off when the famine began was the letter accompanying the first application for a loan.

1011. What you stated was, that you gave a detailed account of the work which you persevered in doing, as far as we understood you, till the famine came on?

We sent forward one of those printed reports.

1012. You abandoned that at the famine; have you resumed it now, and when did you resume it?

No, because we have commenced no new cases since the famine.

1013. Then have you resumed in relation to these?

In cases of excess on the estimates already given to the Treasury, I have explained to your Lordships that the Treasury frequently called upon us for estimates and the state of the works; they called upon us in 1849, they called upon us in 1850, and they called upon us in 1851; the late Chancellor of the Exchequer did so. We sent those statements for each particular work. If the estimates were within the limits of those statements, we merely said, in the letter forwarding the formal application, "We refer your Lordships to the estimate," and that this was within the limits of that amount for which the Government had made provision out of the whole of our loan fund.

1014. When you apply for a particular loan, or an excess upon that particular loan, do you give any account of the causes of that excess to the Treasury?

When we apply for an excess, we do.

1015. Did you do so throughout the famine?

We did not, as well as I recollect.

1016. When did you resume it?

I cannot say; I do not recollect. I should think that it became more necessary to pursue that course about 1848; but the precise period when we commenced, or when we changed, I cannot say. Excesses did not absolutely arise in any great amount until after 1848 or 1849.

1017. Then if I were to move for those reports which you had given to the Treasury, I should get an answer "Nil;" is that so?

No; I think your Lordships could get every one which has been written.

1018. But have any been written?

I recollect

I recollect the one to which I have called your Lordship's attention, that of Strokestown, and I dare say there are many others. All this correspondence about the Brusna, which is laid on your Lordships' table, is relative to causes of excess, and is between us and the Treasury; the same in the Ardee; there is a third case.

1019. But it was not the practice; you do not know what sort of report is sent to the Audit Office?

I do not know the precise account; it is an actual account of all the expenditure and receipts for each district.

1020. What is the business of the Audit Office?

To see that every sum has been properly vouched.

1021. Merely as to expenditure, that it has been expended?

That it has been expended, and that it has been properly vouched, and paid to the parties there named.

1022. Is there not a clause by which you are required to make an annual report of the expenditure upon each individual work to the clerk of the peace?

There is a clause which requires us to deposit a copy of the account with the clerk of the peace; it is section 105; there is no question about it that it is required.

1023. Have you done that?

We have not.

1024. Have you in any instance?

We have done it in one instance, where our attention was called to it. First, allow me to explain that the matter in the early stage of the business seemed to have entirely escaped every one's attention, the accountant and all, that there was any such clause or provision. On the consolidation of the Board of Works, in 1846, a new system of accounts was laid down altogether, and new arrangements, and, in doing so, I remember bringing this very subject before Mr. Bromley, the present Secretary of the Audit Office, showing him, amongst other things, that the shape of the accounts to be kept down in the districts was required, under the terms of that very clause, to be of such a nature as that the account should give information to the proprietors. However, I think the Government, very wisely, having broken up the Drainage Commission, adopted a different system of accounts, and we are not in a position to keep perfectly accurate accounts of actual payments down in the district. Perfectly accurate accounts are kept in Dublin. Before that, you could have had the actual account of payments for unwatering, and every specific head in the districts, under the system which we had laid down, but it was obtained at the risk of sending back the vouchers from our paymasters to the engineer's office, so that the accounts, as truly paid, might be entered. That system was changed, and, amongst the changes, this matter of lodging an account with the clerk of the peace escaped directions for being acted on. We received the following letter on November the 6th, 1851, from a proprietor, on the subject, which first drew our attention to it: "On application to the clerk of the peace for this county at Dundalk to inspect the yearly accounts of expenditure on the 'Ardee Drainage District,' I was informed that no such accounts had been lodged at his office. I therefore beg to remind you of the provisions of the 5 & 6 Vict. c. 89, s. 105, and to request that the accounts, in accordance therewith, may be lodged at his office without delay. (Signed) Thomas William Filgate." The Board replied as follows: "The Commissioners of Public Works having had under consideration your letter of the 6th ultimo, I am directed to state, that upon the passing of the Act 9 & 10 Vict. c. 86, by which the Drainage Commission was annulled, and the powers and authorities thereof vested in the Board of Public Works, subject to the rules and regulations of the Lords Commissioners of Her Majesty's Treasury, their Lordships made new arrangements with reference to the whole system of accounts, and those of the Drainage were directed to be periodically transmitted to London for audit by the Commissioners for Auditing the Public Accounts, and it did not, therefore, appear necessary, in consequence of these arrangements, to forward statements of the receipts and expenditure to the clerks of the peace, as this information was most fully supplied, with much other matter of interest to the proprietors, in the published annual Reports

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of the Board to Parliament; and parties could always have reference to the books of accounts in this office, whereby they could obtain full information upon any matter in which they were interested. The Commissioners' attention having been, however, called to the clause referred to by you, they have directed the statements of annual receipts and expenditure required by your letter to be prepared, and forwarded to the clerks of the peace; and if you desire further information, they have given instructions that every facility be given to you upon your application for access to the account books in this office."

1025. What is the date of that letter?

The 24th December 1851. Our attention was never, in fact, awakened to the subject of this clause, after the consolidation, until the 6th of November 1851.

1026. Have any steps, since the 6th of November 1851, been taken to supply that deficiency generally?

No, I think not generally; it was done in this particular case; it is an enormous mass of arrear work to prepare, and we really have not an establishment for it; the hands of the Accountants' Office are as full as they can possibly be, and they are only the same abstracts of the accounts which are contained already in the annual reports; whereas every proprietor can have every possible amount of information in detail at the office.

1027. The question is whether you have obeyed the Act of Parliament or not; you have not obeyed it?

I have explained that it has not been done as yet.

1028. And you are not taking any steps now to comply with it?

The minute was made by myself at that time, countersigned by the chairman, and the words are these: "Such statements of annual receipts and expenditure to be prepared and forwarded to the clerks of the peace for each drainage district in operation;" nevertheless it is not my department, and the accountant has found it practically impossible to provide copies of all these accounts as yet.

1029. It is your department, surely, if you are at the head of it?

I am sorry to say I cannot enforce it where we have not the means of doing it.

1030. Could not you represent to the Treasury that you had not such means?

Yes, we could. The accounts are published; the very figures are published in the annual reports to Parliament; we never heard of any inquiry for it until last November; the fact is, it escaped every one's attention; that is the simple truth.

1031. Still, now that your attention has been attracted to it, do not you consider that that provision was put into the Act of Parliament for the sake of giving the proprietors a greater facility of ascertaining how this expense was conducted?

I do, and think it ought to be done.

1032. If the proprietors had had access to these accounts, and they had accompanied the plans and estimates, do you think they would have been so long in ignorance of the fact that the works were so largely exceeding the estimates, and that the plans and specifications had not been adhered to?

There are no plans and specifications in 104 districts; those are the summary proceedings; none are required to be deposited by Act of Parliament with the proprietors. There are plans in several cases of ordinary proceedings which have been deposited for inspection of the proprietors, and lodged pursuant to the Act of Parliament. We think it to be of very great importance that the annual reports should be put into the possession of every proprietor in Ireland interested in the drainages; but your Lordships will recollect that there are 3,100 of them interested in the drainage operations. Those reports, we conceived, would be most beneficially sent to every one of those parties free of expense; but we heretofore have scarcely been able to get enough copies of them for our own officers; there has been very great difficulty about it. But during the course of the last year we were authorized by the Treasury to print the

the reports in Dublin, and to print them in octavo, in such a shape that they could be distributed.

1033. There are but 32 counties, and therefore there are but 32 places where the accounts should be deposited?

I am talking of another matter, of actually distributing these reports, because the accounts give the proprietors very little information; whereas the reports give them everything, and, if read, would have prevented much misunderstanding.

1034. With respect to the form of assent under the summary proceedings, that form is, that "it is proposed to drain and improve by drainage certain lands within the district, designated by the Commissioners for the execution of the said Acts the district of" so-and-so; will you be so good as to procure for us one of the designations of districts by the Commissioners under the summary proceedings?

We have designated the district on the face of the report.

1035. On the face of each report?

On each report that is issued.

1036. Is not the district defined by a map which accompanies the report?

Not in the summary proceedings; there is no map required to accompany the report.

1037. Then it is necessary to have a definition of the district, to observe how the district is defined in the report, whether by enumeration of townlands or by area?

By enumeration of townlands and area; it is nominally defined in the summary proceedings; in the ordinary proceedings it is defined by a map, which is lodged.

1038. The words required in the assent are these: "Whereas under the provisions for summary proceedings in the said last-recited Act contained," namely, the 9th of Victoria, chapter 4, "it is proposed to drain and improve by drainage certain lands within the district, designated by the Commissioners for the execution of the said Acts the district of (blank), in the county of (blank), for which purpose copies of the report made to the said Commissioners, with their opinion thereon, have been lodged for public inspection;" we wish to see those, the object being to show precisely how any man looking at the map may know what lands are included in the district?

I understand that report before your Lordships in the Derryholmes case to be one in which the district is designated, on the face of the report, under the provisions for summary proceedings.

1039. You stated that you frequently had to leave Dublin upon the subject of the awards as to the lands?

Yes.

1040. Are most of those awards attended to by yourself in person, or by what other officer are they attended to?

The Commissioner must attend; one Commissioner is required by law to attend, and the matter is afterwards confirmed by a second, after conference, if necessary; but the Act of Parliament gives a special power to one Commissioner to hold those meetings.

1041. Are two Commissioners obliged to proceed to the spot?

No; only one, under a special clause in the Act of Parliament.

1042. We presume, that at several of those award meetings there is a considerable amount of dispute at times upon the proposed taxation of the lands?

A great number of objections; and those objections are discussed, and considered, and heard at the meeting.

1043. How are they decided ultimately?

If there is no case requiring a reference to the Board, or requiring law opinions, they are decided on the spot by the Commissioner presiding, if they are according to the general understood regulations and principles affecting the service. If they require any special consideration, the decision is not finally given until the matter is considered with the chairman, or with the solicitor, as the case may be, in Dublin.

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1044. What is the general nature of the objections which you would consider would require a mature consideration in Dublin; what class of objections?

Only objections upon matters of law; they seldom arise upon matters of fact, because the district is examined carefully by the presiding Commissioner before the award is made, with the objections in his hand; the objections generally are to being taxed at all, or with a view to get off some portion of the rate.

1045. They are sometimes, we presume, to the area of land taxed, sometimes to the amount of taxation?

Both.

1046. Where a strong remonstrance is made by a proprietor, or his representative, or by tenants, to the amount of taxation imposed upon him, is that decided summarily by the head Commissioner?

It is decided summarily generally by the Commissioner at the place. The course which we take is to send an impartial valuator to value and assess between all the parties in the district; and provided the valuation be relative, no difficulty arises; but we have had cases where the valuation was not satisfactory in this respect, and where we have had the whole district re-valued; and we have had cases where well-founded objections have been made, and where the decision has been on the spot, to alter the draft award, and to assess the party in the proportion which justice required.

1047. The Commissioner on the spot then forms his judgment upon the report of the valuator?

He has that to aid him; besides which, he has an inspection of the district himself.

1048. A personal inspection?

A personal inspection; very frequently we adjourn to the ground to examine the case on the ground.

1049. When you say an impartial valuator, do you mean the engineer who has been employed in the execution of the works upon the land, or do you mean another person who has had nothing whatever to do with the land, until he is sent down to make a valuation?

A valuator who has had nothing to do with the land as regards the execution of the works, and is in no way interested in it. We employ professional valuators of eminence, under the direction of our principal valuator, who is a Government officer attached to the Board of Works.

1050. Is it not difficult for a person who has not seen the land previously to the commencement of the work, to judge what is the amount of improvement which the land may have received?

It would be, if he were not very well experienced in it; there is also the information of the engineer as to the previous state, and very frequently those valuations are made before the works are completed, or before the benefit is rendered.

1051. He might be guided likewise, we presume, by the Poor-law valuation, or any other valuation of the land?

No; that would not apply at all, because it is a prospective question of the value to be derived by the result of the drainage that he has to deal with; whereas the Poor-law valuation, or Mr. Griffith's, or any other valuation, is a valuation of the positive intrinsic value at the time that they examined the lands.

1052. But would it not appear in accordance with common sense, that the charge upon the land should be in some degree regulated by the improved value of the land, and the valuation to which the question referred would have shown what the value was before the work?

The assessment is entirely dependent upon the increase in the value, and not upon the original value.

1053. The question did not refer to a valuation by Mr. Griffith, or any other valuation made subsequent to the work; but it referred to a valuation previous to the commencement of the work, as showing what was the then value of the land.

land. Is it not considered that that would be a fair index of what was the value of the land before the work was commenced?

It would, wherever it was applicable; but it is very rarely that the valuations are made in lots in that way. We only take in certain portions of a townland; and the valuation made by Mr. Griffith, or under the Poor-law, extends over lots quite different from the drainage lots, and include, generally, whole townlands.

1054. And does not point out the precise value of a particular field?

No, I believe, very generally, it does not.

1055. Supposing the tax imposed for the repayment of the drainage to exceed the letting value of the land, or any probable letting value within a few years of the land, should you consider that a fair charge upon the proprietor?

We are not guided by the fact as to whether or not it should exceed the letting value, but we are guided by the productiveness of the land; a proprietor on one side of a drain cannot, perhaps, get any increased rent from his tenants, whilst a proprietor holding exactly similar land on the other, if he happens to hold the land in his own hands, or if his tenant holds it, and cultivates it, may reap a produce equivalent to the whole cost of the drainage in one, two or three seasons, and I have abundant facts here to illustrate that position. If nothing is done with the land, it remains there a *caput mortuum*, of course; in the cases of many classes of soil, he cannot get any increased value out of it, and therefore the hardship may arise to a proprietor who has let his land, that he cannot get the tenant to improve it; but that should not influence the decision as to the taxation, because it is in accordance with the productiveness of, or productive power given to the land by the drainage, that the assessment must be fixed.

1056. In considering an award, have not good and credible judges of land and farming been at times brought forward, to show that the increase in the productive powers of the land was not at all commensurate with the taxation imposed upon that land?

No; I think the general nature of the evidence brought forward was, to show that it was not then a positive improvement; whereas the fact is, that they are charged for the outlet and for the means and facility of improvement afforded by the outlet, and there will be little or no improvement in some cases, until they avail themselves of that facility by cultivation. That is the class of objection most generally brought forward.

1057. Do you mean by cultivation, or by drainage?

Frequently by additional drainage; frequently by both. The great arteries, the great main drains which form the outlets of the lands, and afford means for the improvement of the lands, are made by us under the Act; it devolves in very many instances on the local parties themselves to carry out that drainage into minor detail throughout their own lands, and also it becomes very necessary for the improvement of certain soils that they should be tilled and cultivated.

1058. However, have not complaints of the nature to which we have alluded been made, namely, that in point of fact the taxation was very far beyond any benefit conferred upon the land?

There have been such complaints.

1059. And you have stated in your evidence, that in some cases complaints were made that proprietors were not taxed who had received considerable benefit?

No; I stated that it would have been objectionable if we had omitted them, and it was objected to in some cases, and when the objection was made, we investigated it, and if the fact was so, we included those lands.

1060. Have no complaints been made that you have omitted them in some cases?

I think not, except as I have mentioned. I do not remember the case to which your Lordship refers; but we were very particular in watching to see that there was no such omission.

1061. You stated that the valuator who was sent down by you to value the lands for the purposes of award, was a person not in any way connected with the works?

Yes.

 1062. That

W. T. Mulvany, Esq.

23d June 1852.

1062. That, in point of fact, he might be, and generally was, a person who had never seen the district before?

No, not generally; they are persons of very great experience in that class of work, trained to it.

1063. He might not have seen that district?

He might not; he forms, therefore, the best judgment he possibly can from his experience of such cases. Your Lordship is not aware, perhaps, from not being present when the former day's evidence was given, that we were obliged to commence these districts in the most summary way, upon the most cursory survey, and without any detail valuation.

1064. The question now refers to the award?

When those districts are closed, and we come to arbitrate between the various proprietors, the law has provided that in these summary cases it shall not be necessary for us to state the original value (for, in fact, it could not be ascertained) before the drainage; therefore, we have only to assess equitably the expenditure in proportion to the benefit conferred on each property.

1065. In making your award, or rather in valuing for the purposes of award, in these cases under the summary proceedings, how is the valuator enabled to determine what amount of benefit any particular portion of land may have derived from the drainage when he never saw the land in its original state, and has no positive information as to what the value of the land was before the drainage work was commenced?

The answer is, that he does the best which his skill and practical experience in that business enables him to do; but he has all the information which the engineers there can afford him, and which the people in the neighbourhood can afford him, as to the former state of the lands; and he frequently sees the land immediately after the drainage is effected, before the change has taken place; and sometimes long before the work is completed the valuation is made; he also sees in a great many instances part of the lands in their original state; he sees it before the improvement has taken place.

1066. In a former part of your examination to-day, allusion was made to the difference between shallow drainage, for the purpose of converting flooded lands into pasture, and deep drainage, which would be necessary if it was required to convert the lands into arable lands; have you adopted in the plans for your drainage any particular level under the general surface of the low lands for the usual level of the water in the river, not speaking, of course, of floods, but the usual level of the water. How many feet under the general level of the adjoining lands have you endeavoured to make the current of the water?

It would depend, as your Lordships will very readily see, on the size of the river that is to be discharged; if it is a very large one, the water falls to a very low level, indeed in summer nine or ten feet or more under the level of the lands, in consequence of making the channel of sufficient depth and capacity to hold the floods; if it is a small one, and the quantity of flood to be carried down is not very great, the water surface is about five or six feet under the ordinary level of the lands. Here are the printed instructions to the engineers, and diagram sections which show the change of form and depth of channel directed in 1846 and 1848 to be made from the shallow system to the deep system of drainage; that line is the ordinary flood level which is shown as the water surface in the section.

1067. That is the flood level?

The ordinary flood level; the maximum flood then, we conceive, will very probably fill the channel above that level, perhaps to the very edge, or within a couple of feet of it.

1068. You remember that there were some matters in dispute between the Board of Works and the proprietors of land with respect the Oranhill drainage?

I do.

1069. Was that with respect to award?

It was; it was objecting to the increased expense, I think.

1070. Objecting to the award consequent upon the increased expense?

The

The increased expense consequent upon increasing the depth of the channel to effect the drainage.

1071. And the amount charged upon the land?

Of course, as a consequence upon that; but I do not think there was any objection as between the various proprietors to the relativeness of the assessment.

1072. Did not the objection upon the part of one proprietor go to this extent, that he was charged so much for what he considered a clear loss to him far beyond any benefit which he received; that was the nature of his complaint, was not it?

It was; but it was satisfactorily proved, by comparison with other lands in the same district, that those lands, if cultivated and brought into operation, would repay the whole drainage work in a very few years; that is to say, the productiveness would. I do not know whether the proprietor objecting in that instance had the lands in his own hands; if he had not, it was impracticable for him to avail himself of the improvement; but I know that another proprietor, about whom he was very anxious indeed, and whose property was affected by it, is deriving a positive profit over and above the cost of the drainage (or the annual charge he has to pay for a limited period) by that very measure.

1073. Was not it reported to the Board that in that case the proprietor alluded to went so far as to take the opinion of counsel, with a view to contesting the powers of the Board?

I recollect no such report, except as stated in my evidence on the last day that I heard the noble Chairman had mentioned it.

1074. What are your powers of remedy against a proprietor of land that has been improved; do you proceed against the land, or against the proprietor?

Against the proprietor, if the instalment be under 50 *l.*, by civil bill, and we can also proceed by a receiver upon the property.

1075. By a receiver of rents?

A receiver under the Court of Chancery.

1076. In no case, then, do you proceed against small tenants?

No, we do not.

1077. Therefore a proprietor whose land was not improved directly by your drainage, but was made in an improvable condition at a small outlay, would be unable to complete the improvement for which you had given facility, unless he had the consent of the tenants who occupied it, or proceeded to eject them?

Or if they had leases: there is a provision in the Act of Parliament that their rent can be increased by the Commissioners, so as to remunerate the proprietor for what he has to repay.

1078. Has it not been represented to you in making the award, that, practically speaking, it would be perfectly impossible to increase the rent to the amount of the taxation?

Clearly in some parts of the country, and we brought this fact before the Government. We wrote a special letter to the Treasury, which is in this Correspondence, page 433, showing that, owing to the general depreciation in the value of land, frequently the rents to be received from the lands after their improved condition were less than were paid before the improvement, and we therefore urged upon the Government to permit us to extend the term of repayment to 40 years.

1079. Has it not come under your observation, or has it not at least been represented to you, that there is a certain quantity of land in Ireland which has been charged for these drainages, which, so far from being really improved, has practically been lowered in value?

Not lowered by the drainage; there are no cases of that kind that I am aware of, but it is lowered by the general fall of land.

1080. The question refers simply to being lowered by the drainage?

No, not that I am aware of.

1081. Lands of the nature called in the country callow lands?

W. T. Mulvany, Esq.

23d June 1852.

Callow lands are most generally importantly improved; the only cases which I know where they are deteriorated, are where the works are unfinished, and where they are more liable to flood now than they were before, owing to the works being suspended for want of second assents.

1082. We are not speaking now of whether these representations may, in your opinion, be well-founded or not; but is it not in your recollection that some such representations have been made upon award?

Yes, I do recollect a case; we were absolutely threatened with a suit for taking the water off land in the county of Wexford, and it is pending at present, though the evidence brought before myself went to show that the party was enabled to feed stock on that land for the whole year round, when before he could only enjoy it for a few months; and, from my own inspection before and after the drainage, it was evident the land was most importantly improved; but there was an actual suit commenced against the Board in the south on that ground.

1083. You stated, in answer to a previous question, that in a great majority of instances where these arterial drainage works are complete, the land is not placed in a position to return an immediate profit, but that, in order that the benefits which have been conferred upon the land by the arterial drainage should be made available, further outlay is required on the part of each separate proprietor, for the purpose of making thorough drains, or other drains of a different character into the new outlet created by the arterial drainage?

In many instances it is so, where the lands are of a nature not spontaneously to produce an improved crop; but in very many others, and the large mass of the others, the increase is direct and immediate.

1084. So that, in point of fact, the charge which is placed upon the land for the arterial drainage, does not represent all the cost which the proprietor of the land must undergo before he can derive any benefit from the arterial drainage?

In many instances; but the cultivation which would be necessary to produce that benefit, very frequently will be repaid by the produce in the first or second year.

1085. When you say "cultivation," do you mean absolutely the necessity of cultivating certain particular crops?

Various crops; on some of the lands which are the most wretched moors, and bad cut-away bogs and marshes, the occupiers burn the surface, and throw in a crop of rape, which costs them about 2*l.* the Irish acre, and they reap from 8*l.* to 10*l.* profit upon it; whereas the drainage charge upon it may not be more than 4*l.* or 5*l.* per statute acre, to be paid in 20 or perhaps more years; the same with potatoes, for which the lands are freely let in some districts at high rents as "conacre," and with turnips, mangel-wurzel, and other green crops; rape has been very generally used as a first improver, and very successfully. There is a considerable collection of facts on this subject, contained in the annual reports which are laid before your Lordships.

1086. Your answer as to that, refers chiefly to land on bogs, we apprehend?

Both on bogs and on verges of rivers, beds of lakes, &c.

I beg to repeat, that it is utterly impossible for the subject of the Committee's inquiry to be understood, or the results of the drainage operations and the administration of the law to be understood, unless I complete the statement which I commenced on the last day. It is of the deepest importance to the whole case, that it should be made and considered. I have therefore prepared a continuation of that statement.

1087. Will you deliver it in?

[*The Witness delivers in the same.—Vide* Appendix C.]

The Witness is directed to withdraw.

Ordered, That the Committee be adjourned to Friday next, One o'clock.

APPENDIX.

LIST OF APPENDIX.

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APPENDIX.

Appendix A.

Treasury Minute, 22 March 1850.

Write to the Commissioners of Public Works, that, with such additional funds as may be expected from private sources and from their ordinary loan fund, provision has been made for completing all the arterial drainage works which have been commenced in any part of Ireland; the further sum required to be provided for this purpose, according to the Return furnished by them on the 31st January last, being,

See over leaf.

	£.
For works commenced in distressed counties, as described in the correspondence which took place on this subject in May 1849	608,906
And for works in the remaining counties, being altogether -	259,650
	£. 868,556

State that my Lords consider it to be of great importance that these works should be completed with as little delay as may be consistent with their proper execution, in order that the full benefit may be derived from them as early as possible, that the proprietors may be saved from any unnecessary charge for accruing interest, and that the inconvenience caused in some parts of the country by the outlets in the lower parts of the streams not being cleared may be avoided. My Lords therefore desire that arrangements may be forthwith made for carrying on these works with all practicable speed, as soon as the season will permit, and more especially those which may be completed within the year, and full details of the progress made should be furnished in the monthly reports made to this Board on the drainage works.

It is not their Lordships' intention to provide funds for any works in any part of Ireland which have not been already commenced; but the Commissioners may execute such works at the expense of the parties interested in them, provided that before the works are commenced, full security be given that the whole of the funds required to complete them will be provided from private sources.

It is their Lordships' desire that all drainage works should be executed by contract, to the full extent to which this mode of proceeding can, in the opinion of the Commissioners, be had recourse to with safety and advantage, care being taken, by a proper system of inspection, that in every case in which a contract is made, the work is executed strictly in accordance with the specifications, and that before any payment is made to the contractor, certificates from the inspector are given that the work has been properly executed, and to an extent justifying such payment.

State in conclusion, that it is their Lordships' intention that the control vested in the Chairman by the Minutes of this Board, dated 25th May and 8th June 1849, should be preserved unimpaired, and that officer will be held responsible for the due execution of the instructions of this Board, until the arterial drainage works shall be brought to a final close.

RETURN REFERRED TO IN

DISTRESSED COUNTIES, as described in May 1849. - - - -

No. 1.—Works commenced. - - - - - - - -

No. in List.	NAME.	STATE.	Revised Estimate in 1849.	Estimate for Work, original or revised, previous to 1849.	Expended to 31st Dec. 1849.	Engineers' approximate Estimate to complete.
			£. s. d.	£. s. d.	£. s. d.	£. s. d.
3	Burrisokane - - -	under revision - - -	- - -	3,486 2 8	7,455 13 –	2,000 – –
9	Burris-in-Ossory - -	in progress - - -	- - -	6,896 – 9	12,249 11 10	3,000 – –
10	Strokestown - - -	- ditto - - -	- - -	17,996 7 –	20,222 16 4	6,000 – –
11	Longford - - -	- ditto - - -	29,737 6 3	14,288 – –	12,314 18 4	17,422 7 11
14	Turloughmore - -	- ditto - - -	49,500 – –	23,700 – –	29,500 14 2	19,879 14 1
15	Dungolman - - -	stopped for second assents -	- - -	10,171 – –	6,636 16 –	4,134 9 –
18	Killimor - - -	- ditto - - -	- - -	25,504 15 5	24,511 4 11	16,790 – –
19	Cappagh - - -	- ditto - - -	- - -	8,531 19 6	8,559 3 –	12,478 – –
20	Shrule - - - -	in progress - - -	- - -	10,302 – –	14,614 7 3	6,162 – –
21	Owenabrockagh - -	nearly complete - -	- - -	1,800 – –	3,034 8 8	40 – –
23	Moyour - - - -	in progress - - -	- - -	3,380 – –	7,353 17 3	550 – –
27	Brusna (Ferbane) - -	- ditto - - -	53,593 – 2	47,329 11 8	29,751 11 1	27,315 – –
28	Ballycasey - - -	- ditto - - -	- - -	1,067 18 –	3,283 – 6	200 – –
31	Kilmaine - - -	- ditto - - -	- - -	6,700 – –	9,810 7 6	600 – –
32	Lough Garra and Mantua -	stopped for second assents -	17,430 13 7	11,030 – –	9,734 15 3	7,695 18 4
33	Comogue - - -	in progress - - -	- - -	3,094 11 7	2,633 6 9	1,346 1 11
34	Ballinhassig - - -	- ditto - - -	6,944 14 5	4,783 12 –	6,372 8 4	3,800 – –
36	Inny - - - -	- ditto - - -	- - -	34,994 – –	20,202 9 4	30,789 15 10
37	Rath or Cloneen - -	stopped for second assents -	- - -	6,797 – –	4,188 15 2	3,002 8 9
38	Dunkellin - - -	- ditto - - -	- - -	22,500 10 –	21,762 14 3	27,372 – –
40	Annagh - - - -	in progress - - -	- - -	3,780 – –	3,120 19 2	2,876 – –
42	Templemore - - -	- ditto - - -	- - -	7,224 14 10	8,084 4 –	4,400 – –
43	Loughs Oughter and Gowna and River Erne.	stopped for second assents -	103,490 – –	51,969 – –	26,919 13 11	76,570 6 1
44	Youghal - - -	in progress - - -	- - -	8,811 15 –	9,432 3 1	3,690 – –
45	Mullyfarry - - -	- ditto - nearly completed	- - -	664 – –	970 13 11	40 – –
46	Alick - - - -	- ditto - - ditto -	- - -	1,510 – –	2,904 9 5	40 – –
47	Clonakilty - - -	- ditto - - ditto -	- - -	5,281 – –	9,258 4 11	100 – –
49	Ratooragh - - -	nearly complete - -	- - -	590 – –	871 7 4	150 – –
58	Headford - - -	- ditto - - -	838 15 –	471 – –	973 7 7	52 – –
59	Quin - - - -	in progress - - -	18,870 19 1	8,341 – –	5,406 14 9	13,957 – –
60	Miles and Templebryan -	revised design under consideration.	- - -	912 14 –	1,025 16 9	1,000 – –
61	Rinn and Blackriver -	in progress - - -	- - -	18,388 – –	8,382 10 10	13,645 – –
65	Fergus - - - -	- ditto - - - -	- - -	44,762 – –	22,476 6 2	24,000 – –
69	Curraunboy - - -	- ditto - nearly complete -	- - -	220 – –	266 18 2	40 – –

THE PRECEDING MINUTE.

- - - - DISTRESSED COUNTIES, as described in May 1849.

- - - - - - - - No. 1.—Works commenced.

Provided.	To be provided.	Amount which can be usefully expended between 31st March 1850 and 31st March 1851.	OBSERVATIONS.
£. s. d.	£. s. d.	£. s. d.	
- - -	2,035 11 –	2,035 11 –	Excess. Owing to a great amount of work not originally contemplated; alteration of design to suit improved systems of drainage; extra works at request of proprietors.
2,100 8 8	899 11 4	899 11 4	Excess. Deep sinking; increased number of lateral drains; working in winter; suspensions, and their consequent injuries.
2,833 4 6	3,166 15 6	3,166 15 6	Excess. Owing to suspensions, &c.
2,685 6 11	14,737 1 –	6,500 – –	Excess. Increase in estimate considered necessary after a careful examination of the district. Revised report will be submitted to the proprietors previous to incurring the increased expenditure.
2,694 2 2	17,185 11 11	12,000 – –	Excess. The result of late floods has proved that the works must be carried out on a greatly extended scale. The revised report and estimate will be submitted to proprietors.
- - -	4,501 13 5	4,501 – –	———
2,868 15 1	13,921 4 11	6,000 – –	Excess. Greater capacity of channel required to suit improved systems of drainage; suspensions; increase of interest; works carried on to afford relief, &c.
3,941 13 6	8,536 6 6	4,000 – –	Ditto - - - - - - - - - - ditto.
2,637 3 –	3,524 17 –	3,524 17 –	Excess. Increase in extent of district from 3,068 acres to 4,900 acres; suspensions, &c.
- - -	274 8 8	274 8 8	Excess. Increased works; extent of district, &c.
1,026 3 3	- nil -	- - -	Excess. Size of district doubled; increased works; suspensions, &c.
5,285 – 6	22,029 19 6	10,000 – –	Excess. Extension of works; additional sinking; suspensions; interest.
116 19 6	83 – 6	83 – 6	Excess. Deep sinking; extra works; suspensions, and their consequences.
151 2 6	448 17 6	448 17 6	Excess. Extra works; suspensions, &c.
2,565 6 3	5,130 12 1	5,130 12 1	Excess. Revised report and increased estimate submitted to proprietors for the purpose of obtaining their assents.
547 16 11	798 5 –	798 5 –	New works and accommodation bridges not originally estimated for.
629 18 5	3,170 1 7	3,170 1 7	Excess arising from long suspensions, &c.
2,353 2 4	28,436 13 6	10,000 – –	Excess. Owing to great amount of additional sinking and other works in main river and tributaries; rock not having been foreseen; works carried out for relief.
1,628 6 9	1,374 2 –	1,374 2 –	———
5,657 5 9	21,714 14 3	4,000 – –	Excess. Greater capacity of channels; suspensions; increased interest; relief; works.
1,779 4 8	1,096 15 4	1,096 15 4	Excess. Additional depth of sinking; stoppages; accidents to works.
3,116 16 6	1,283 3 6	1,283 3 6	Excess. Deeper sinking than was estimated for; unexpected occurrence of rock.
3,882 12 10	72,687 13 3	15,000 – –	Excess. Revised report and increased estimate submitted to proprietors for the purpose of obtaining their assents.
2,088 6 5	1,601 13 7	1,601 13 7	Excess. This is a work of embankment from the sea; addition to embankment became necessary; injury was done by storms.
29 6 1	10 13 11	10 13 11	Award in preparation. Excess arose from additional works and protracted suspensions.
- - -	270 8 6	270 8 6	Ditto - - - - - - - - - - ditto.
- - -	867 2 7	867 2 7	An embankment from the sea. Several injuries caused by storms.
95 10 7	54 9 5	54 9 5	Excess. Caused by extra sinking rendered necessary by the subsidence of bog.
- - -	111 6 11	111 6 11	Excess. The revised estimate was submitted to the proprietors, and their assents given.
5,593 5 3	8,363 14 9	3,000 – –	Works and district greatly extended; unexpected occurrence of rock; district nearly trebled in size. The revised estimate and report were submitted to proprietors, and their assents to the increased estimate obtained.
987 9 6	12 10 6	12 10 6	Excess. Caused by increased depth of sinking, extra works, &c.
3,666 10 2	9,978 9 10	5,000 – –	Excess. Owing to greater extension of district. Increase in estimate counterbalanced by increase in quantity of land improved.
6,339 6 8	17,660 13 4	10,000 – –	Revised estimate under consideration, but it will not probably exceed the original.
53 1 10	- nil -	- - -	This 40 *l.* is to perfect the district for award.

DISTRESSED COUNTIES, as described in May 1849—Works commenced—*continued.*

No. in List.	NAME.	STATE.	Revised Estimate in 1849.	Estimate for Work, original or revised, previous to 1849.	Expended to 31st Dec. 1849.	Engineers' approximate Estimate to complete.
			£. s. d.	£. s. d.	£. s. d.	£. s. d.
70	Cuilmore	in progress; nearly complete.	- - -	231 - -	303 7 7	40 - -
71	Broadlough	ditto - - ditto	- - -	965 - -	1,180 10 -	40 - -
72	Mullawn	ditto - - ditto	- - -	274 - -	310 1 4	40 - -
73	Cameloon	ditto - - ditto	- - -	355 - -	566 16 -	40 - -
74	Shandrum	ditto - - ditto	- - -	685 - -	688 2 5	40 - -
78	Kill	stopped for second assents	5,034 5 9	2,689 - -	2,180 12 9	3,096 - -
79	Hind	ditto	26,766 17 -	14,280 - -	9,237 12 7	17,429 4 5
81	Eslin	in progress	9,943 - -	7,306 - -	5,471 15 1	4,471 4 11
82	Shanagolden	stopped for second assents	12,834 - -	8,322 - -	3,172 17 -	9,661 3 -
83	Castlebar Lakes	in progress; nearly complete.	- - -	1,156 - -	1,977 6 6	40 - -
108	Boley	suspended	- - -	995 - -	1,718 2 6	400 - -
110	Carrowmore Lake	in progress	- - -	505 - -	727 8 9	40 - -
116	Tawnawoggaun	ditto	- - -	1,106 11 -	1,285 9 6	40 - -
141	Moyne and Crosspatrick	ditto	- - -	690 - -	687 13 9	40 - -
153	Cavetown	ditto	3,272 9 11	3,142 - -	1,017 11 7	2,254 18 4
159	Croghan	ditto	2,655 10 -	2,546 - -	1,153 17 6	1,501 12 6
160	Keenagh	ditto	9,346 - -	9,026 - -	909 14 8	8,436 5 4
161	Castlemartyr	ditto	- - -	5,060 - -	1,988 11 -	5,000 - -
162	Drumbliffe	ditto	- - -	2,968 - -	587 1 5	2,073 10 5
164	Dunmore	ditto	- - -	40,421 - -	2,323 13 7	45,795 - -
166	Lough Dalla	ditto	- - -	2,504 - -	732 16 11	1,771 3 1
169	Saleen Lough	ditto	- - -	2,179 - -	2,153 16 1	528 - -
170	Lavally	ditto	- - -	11,780 - -	2,158 2 5	12,776 - -
172	Balla	ditto	- - -	15,299 - -	2,313 19 5	12,918 - -
173	Coolaney	ditto	- - -	3,912 - -	550 19 9	3,581 - -
174	Lough Mask and Robe	ditto	- - -	73,909 9 3	3,742 4 -	70,167 - -
175	Ballynahown	ditto	- - -	5,035 - -	2,147 11 2	2,714 - -
176	Monivea	ditto	- - -	15,919 - -	1,233 4 2	22,081 - -
177	Carrowbeg	ditto	- - -	330 - -	32 4 -	297 16 -
179	Crosslough	ditto	- - -	340 - -	42 - 4	303 - -
182	Dunmoran	ditto	- - -	3,457 - -	882 19 2	2,540 - -
183	Lough Corrib, &c.	ditto	- - -	147,974 17 -	46,447 17 6	117,802 - -
184	Ballinamore and Ballyconnell (Junction Navigation).	ditto	- - -	131,858 8 6	83,068 10 3	73,332 - -
188	Lisduff	in progress	1,202 9 3	1,035 - -	1,042 11 9	301 5 4
192	Derryholmes	- - - - -	4,258 - -	3,608 - -	1,391 14 1	2,897 - -
193	Lough Lannagh	- - - - -	- - -	12,940 - -	1,881 13 -	11,024 - -
		£.	355,718 - 5	952,091 18 2	541,596 18 5	766,650 5 3

Office of Public Works, Dublin,
31 January 1850.

- - Distressed Counties, as described in May 1849—Works commenced—*continued.*

Provided.	To be provided.	Amount which can be usefully expended between 31st March 1850 and 31st March 1851.	OBSERVATIONS.
£. s. d.	£. s. d.	£. s. d.	
27 12 5	12 7 7	12 7 7	This 40*l.* is to perfect the district for award. For cause of excess, see general memorandum.
- - -	45 10 -	45 10 -	Ditto - - - - - - - - - - ditto.
63 18 8	- nil -	- - -	Ditto - - - - - - - - - - ditto.
- - -	51 16 -	51 16 -	Ditto - - - - - - - - - - ditto.
97 2 7	- nil -	- - -	Ditto - - - - - - - - - - ditto.
3,508 7 3	- nil -	- - -	This district has been greatly increased; additional works executed; unexpected difficulties occurred in the execution of the works.
3,782 13 1	13,646 11 4	6,000 - -	Ditto - - - - - - - - - - ditto; 11,000*l.* of the amount to complete is for navigation; a free grant of 5,500*l.* has been sanctioned.
4,034 8 11	436 16 -	436 16 -	Extent of district doubled; great number of additional works; suspensions.
4,827 9 -	4,833 14 -	1,000 - -	Excess. Caused by unexpected rock excavation; additional sinking; suspensions.
85 2 3	- nil -	- - -	40*l.* to perfect the district for award. Excess caused by additional works.
26 17 6	373 2 6	373 2 6	Excess. Caused by greatly extended works to suit improved system of drainage; suspensions, &c.
- - -	102 7 9	102 7 9	40*l.* to perfect district for award.
- - -	118 18 6	118 18 6	Ditto - - - ditto.
2 6 3	37 13 9	37 13 9	Ditto - - - ditto.
2,152 8 5	102 9 11	102 9 11	———
854 2 6	647 10 -	647 10 -	———
2,090 5 4	6,346 - -	6,000 - -	———
2,011 9 6	2,988 10 6	2,988 16 -	Excess. Caused by rock.
912 18 7	1,160 11 10	1,160 11 10	———
2,676 6 5	43,118 13 7	10,000 - -	Excess. Caused by greatly increased sinking, and rock.
1,267 3 1	504 - -	504 - -	———
1,536 13 11	- nil.	—	———
2,866 5 7	9,909 14 5	5,000 - -	Excess. Additional sinking; alteration of design; rock.
3,686 - 7	9,231 19 5	5,000 - -	———
1,449 - 3	2,131 19 9	2,131 19 9	Excess. Error in original estimate as to expected sale of limestone.
6,418 7 9	63,748 12 3	10,000 - -	———
852 9 4	1,861 10 8	1,861 10 8	———
4,766 15 10	17,314 4 2	5,000 - -	Excess. Greatly increased works necessary.
297 16 -	- nil.	—	———
297 19 8	5 - 4	5 - 4	———
617 - 10	1,922 19 2	1,922 19 2	———
21,366 14 2	96,435 5 10	20,000 - -	Excess. Purchase of land, mills, &c., for which provision was not made in original estimate.
16,868 4 3	56,463 15 9	20,000 - -	Excess. Additional excavation; lock
108 13 3	192 12 1	192 12 1	———
608 5 11	2,288 14 1	2,288 14 1	———
4,118 7 -	6,905 13 -	5,000 - -	———
161,632 12 7	608,906 16 9	224,200 2 4	

DISTRESSED COUNTIES, as described in May 1849—*continued.*

FINAL NOTICES ISSUED.

No. 2.—WORKS *not* commenced.

No. in List.	NAME.	STATE.	Revised Estimate in 1849.	Estimate for Works.	Expended to 31st Dec. 1849.	Engineers' approximate Estimate to complete.
			£. s. d.	£. s. d.	£. s. d.	£. s. d.
158	Kilchreest	not commenced	- - -	9,081 - -	179 2 9	12,108 - -
163	Kisdoon	ditto	4,055 6 -	2,513 - -	113 9 2	3,941 16 10
165	Breeogue	ditto	- - -	5,731 - -	49 12 3	5,681 7 9
178	Askillaun	executed under Land Improvement Act.	—	—	—	—
		£.	4,055 6 -	17,325 - -	342 4 2	21,731 4 7

Office of Public Works, Dublin,
31 January 1850.

COUNTIES *NOT* DISTRESSED, as described in May 1849.

No. 3.—WORKS commenced.

No. in List.	NAME.	STATE.	Revised Estimate.	Estimate for Work.	Expended to 31st Dec. 1849.	Engineers' approximate Estimate to complete.
			£. s. d.	£. s. d.	£. s. d.	£. s. d.
2	Ardee	under revision	- - -	8,388 - -	11,622 13 8	5,000 - -
5	Cahore	suspended	- - -	3,100 - -	2,627 19 -	1,000 - -
7	Fane	in progress	- - -	6,002 - -	6,586 5 6	1,500 17 5
8	Glyde	ditto	- - -	19,896 5 8	22,266 11 7	13,000 - -
17	Boyne	ditto	- - -	25,706 11 10	30,460 6 4	15,445 - -
25	Nobber	ditto	- - -	5,327 2 -	5,386 - 5	1,950 - -
29	Deel	ditto	- - -	9,883 3 -	10,868 1 1	5,242 - -
35	Shinrone	ditto	- - -	3,908 - -	5,390 8 5	2,000 - -
41	Kilbeggan	ditto	- - -	10,397 13 10	8,429 12 4	14,317 drainage 15,957 mill power
50	Shandon	completed	- - -	210 - -	943 9 8	- - -
53	Loughans	in progress	- - -	1,802 4 6	3,062 4 9	300 - -
54	Kilbride	ditto	- - -	3,956 14 2	4,134 8 8	2,100 - -
55	Carrigower	completed	- - -	- - -	3,468 15 9	- - -
57	Kilmurry	ditto	- - -	- - -	947 2 2	- - -
62	Ballyteigue	in progress	- - -	18,000 - -	16,131 16 8	9,250 - -
68	Lough Neagh	ditto	- - -	195,714 4 7	56,332 14 9	145,975 16 5
80	Low	ditto	7,226 19 -	5,445 - -	8,601 15 1	900 - -
105	Kilcock	ditto	- - -	1,600 - -	1,587 16 4	150 - -
106	Garr	ditto	- - -	- - -	3,718 6 2	- - -
109	Leesborough	ditto	- - -	2,499 2 -	2,943 14 10	2,210 - -

- - - - - DISTRESSED COUNTIES, as described in May 1849—*continued.*

- - - - - - - - No. 2.—WORKS *not* commenced.

Provided.	To be provided.	Amount which can be usefully expended between 31st March 1850 and 31st March 1851.	OBSERVATIONS.
£. s. d.	£. s. d.	£. s. d.	
2,820 17 3	9,287 2 9	6,000 - -	Revised estimate under consideration.
1,386 10 10	2,555 6 -	2,555 6 -	Revised estimate submitted for proprietors' consideration previous to commencing works.
1,450 7 9	4,231 - -	- - -	Proprietors requested that the works should not be commenced.
—	—	—	
5,657 15 10	16,073 8 9	8,555 6 -	

but much of which should be included in DISTRESSED.

- - - - - - - - No. 3.—WORKS commenced.

Provided.	To be provided.	Amount which can be usefully expended between 31st March 1850 and 31st March 1851.	OBSERVATIONS.
£. s. d.	£. s. d.	£. s. d.	
890 8 -	4,109 12 -	4,109 12 -	Explained in 17th Annual Report.
- - -	1,795 19 8	1,795 19 8	Excess on original estimate. Caused by suspension of works, and want of men.
486 2 3	1,014 15 2	1,014 15 2	
3,778 14 6	9,221 5 6	3,000 - -	Excess. Caused by suspension of works; accumulation of interest; and extra works.
- - -	18,169 1 -	10,000 - -	Excess. Arising from great extent of work not originally contemplated; extra works; suspensions, and working in winter.
1,440 7 4	509 12 8	509 12 8	Excess. Owing to suspension, and increase of interest.
681 18 11	4,560 1 1	4,560 1 1	Ditto, and extra works.
- - -	2,190 8 5	2,190 8 5	Excess. Caused by extra works; suspensions; working in winter; and injuries during suspensions.
- - -	30,657 17 10	10,000 - -	Change in design; increased excavation; suspensions; and new works called for by mill-owners.
- - -	83 9 2	83 9 2	Completed for award.
- - -	359 - 4	359 - 4	Excess. Additional sinking; great amount of extra works; working in winter; suspensions, and their consequences.
- - -	2,272 14 8	2,272 14 8	Ditto - - - ditto - - - ditto.
- - -	- nil -	- - -	Award in preparation.
- - -	- nil -	- - -	Award made.
3,145 1 10	6,104 18 2	6,104 18 2	Excess. Increased work, and suspensions.
4,892 17 4	141,082 19 1	25,000 - -	Excess. Extra works, of various kinds.
805 17 10	94 2 2	94 2 2	Excess. Compensation for mills not anticipated.
171 4 10	- nil -	—	
- - -	169 11 8	169 11 8	Completed for award.
1,955 5 2	254 14 10	254 14 10	Excess. Great amount of extra sinking; bridges; and works of various kinds.

COUNTIES *not* DISTRESSED, as described in May 1849, but much of which

No. in List.	NAME.	STATE.	Revised Estimate.	Estimate for Work.	Expended to 31st Dec. 1849.	Engineers' approximate Estimate to complete.
			£. s. d.	£. s. d.	£. s. d.	£. s. d.
111	Derrylin	in progress	- - -	455 17 -	562 14 4	247 - -
112	Kimneen	- ditto	- - -	180 - -	232 13 1	89 - -
113	Drumbonriney	completed	- - -	- - -	318 8 9	- - -
121	Foran Well	in progress	- - -	2,436 - -	2,717 7 -	420 - -
124	Kilmaganny	- ditto	- - -	8,597 - -	3,304 3 6	5,547 - -
125	Clonlost	stopped for second assents	- - -	1,635 - -	2,068 16 -	200 - -
138	Castlebernard	in progress	- - -	12,934 - -	4,841 11 11	12,000 - -
140	Maghera	stopped for second assents	- - -	1,385 - -	1,391 19 5	350 - -
151	Lough Crew	in progress	- - -	1,707 - -	2,292 2 3	254 13 6
152	Ballinakill	- ditto	- - -	691 5 -	1,107 7 1	30 - -
154	Carragha	- ditto	- - -	1,438 - -	1,258 2 7	50 - -
155	Boardsmill	- ditto	3,660 16 9	3,344 - -	3,401 17 1	570 - -
156	Ballinaskea and Castlerickard.	- ditto	1,674 5 5	1,210 - -	2,093 10 9	60 - -
180	Wottonstown	- ditto	940 - -	900 - -	78 5 4	861 14 8
187	Glenariff	- ditto	- - -	2,206 - -	1,370 1 8	1,700 7 -
189	Burren	- ditto	- - -	26,489 - -	8,398 8 9	18,070 11 3
		£.	13,502 1 2	387,424 3 7	240,947 12 8	276,748 - 3

Office of Public Works, Dublin,
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FINAL NOTICES ISSUED.

No. 4.—WORKS *not* commenced. - - - - - -

No. in List.	NAME.	STATE.	Revised Estimate, 1849.	Estimate for Work.	Expended to 31st Dec. 1849.	Engineers' approximate Estimate to complete.
			£. s. d.	£. s. d.	£. s. d.	£. s. d.
52	Main	not commenced	- - -	10,260 15 10	677 3 2	9,583 12 8
92	Brickey	- ditto	- - -	2,946 18 5	172 19 4	2,773 19 1
146	Martinstown	- ditto	- - -	267 - -	18 17 3	248 2 9
157	Shanbogh	- ditto	- - -	1,441 12 -	57 16 -	1,383 16 -
167	Red Cross	- ditto	- - -	690 - -	47 8 10	642 11 2
168	Irishtown, Ongenstown and Grange Streams.	- ditto	- - -	837 10 -	32 14 3	804 15 9
171	Ardanairy	- ditto	- - -	961 - -	42 11 2	918 8 10
181	Skane	- ditto	- - -	4,394 - -	72 13 9	4,321 6 3
185	Burton Hall	- ditto	- - -	1,743 - -	38 12 9	1,704 7 3
186	Raheen	- ditto	- - -	1,284 - -	37 11 -	1,246 9 -
190	Griffinrath	- ditto	- - -	858 - -	49 16 6	808 3 6
191	Clongill	- ditto	- - -	721 - -	38 9 -	682 11 -
		£.	- - -	26,404 16 3	1,286 13 -	25,118 3 3

Office of Public Works, Dublin,
31 January 1850.

should be included in Distressed—Works commenced—*continued.*

Provided.	To be provided.	Amount which can be usefully expended between 31st March 1850 and 31st March 1851.	OBSERVATIONS.
£. s. d.	£. s. d.	£. s. d.	
- - -	253 14 4	253 14 4	Excess. Additional works; suspensions; and interest.
- - -	141 13 1	141 13 1	Ditto - - - ditto.
- - -	49 8 9	49 8 9	——
368 13 3	51 6 9	51 6 9	Excess. Caused by accidents to works during suspension.
695 17 -	4,851 3 -	4,851 3 -	——
66 4 -	133 16 -	133 16 -	Excess. Caused by accidents to works during suspension.
- - -	12,536 1 2	6,000 - -	Excess. Additional sinking; great amount of extra works; working in winter; suspensions, and their consequences.
263 12 2	86 7 10	86 7 10	Excess. Caused by injury to works during suspensions.
207 17 9	46 15 9	46 15 9	Excess. Owing to extension of district.
- - -	187 7 1	187 7 1	Excess. Caused by injury to works during suspensions.
2 16 7	47 3 5	47 3 5	Nearly completed.
398 2 11	171 17 1	171 17 1	Excess. Caused by injury during suspension.
- - -	453 10 9	453 10 9	Ditto - - - ditto.
821 14 8	40 - -	40 - -	——
129 18 4	1,570 8 8	1,570 8 8	Excess on first estimate approved by proprietors before commencing the works.
1,690 14 9	16,379 16 6	6,000 - -	——
22,893 9 5	259,650 13 7	91,603 12 6	

- - - - - - - No. 4.—Works *not* commenced.

Provided.	To be provided.	Amount which can be usefully expended between 31st March 1850 and 31st March 1851.	OBSERVATIONS.
£. s. d.	£. s. d.	£. s. d.	
- nil -	10,260 15 10	5,000 - -	——
827 1 8	1,946 17 5	2,000 - -	——
- nil -	267 - -	267 - -	——
- nil -	1,441 12 -	1,441 12 -	——
- nil -	690 - -	690 - -	——
- nil -	837 10 -	837 10 -	——
- nil -	961 - -	961 - -	——
- nil -	4,394 - -	4,394 - -	——
- nil -	1,743 - -	1,743 - -	——
- nil -	1,284 - -	1,284 - -	——
- nil -	858 - -	858 - -	——
- nil -	721 - -	721 - -	——
827 1 8	25,404 15 3	20,197 2 -	

APPENDIX B.

No. I.

RETURN of all the WORKS which have been commenced in IRELAND under the ACTS for ARTERIAL DRAINAGE, together prepared of the Cost of the Preliminary Survey, the Date when that Estimate was furnished to the Parties interested: received by the Board of Works: Also, the Date of the Completion of the Survey and detailed Estimate in each Case; Case where the Work has actually been finished, and the Award made, the Amount of the original Estimate, and the to the present Date; and also a full Estimate of the Amount which will still be required for the Completion of the

No. of Final Notice.	DISTRICTS.	Date, in each Case, of the original Application from the Party or Parties interested.	Where an Estimate was prepared of the Cost of the Preliminary Survey, the Date when that Estimate was furnished to the Parties interested.	Where the Amount required for the Preliminary Survey and Estimate was subscribed, the Date when the Amount was received by the Board of Works.	The Date of the Completion of the Survey and detailed Estimate, in each Case (Date of Report).	The Date when the full Assents were received.	The Date when the Works were actually commenced.	In each Case finished, The Amount of the original Estimate.
								£. s. d.
2	Ardee	13 Feb. - 1843 23 June - 1843	15 Feb. - 1843	15 Feb. - 1843 4 Mar. - 1843	4 July - 1843 27 Dec. - 1843	14 Mar. 1844	4 June 1844	- - -
40	Armagh	3 Feb. - 1846	- - -	- - -	23 June - 1846	25 Aug. 1846	25 Oct. 1846	- - -
46	Allick	24 April - 1846	- - -	- - -	4 June - 1846	2 Oct. 1846	24 Nov. 1846	1,510 - -
1	Blackwater	25 Aug. - 1842	27 Aug. - 1842	7 Sept. - 1842	26 Sept. - 1842	31 Aug. 1843	5 June 1844	10,000 - -
3	Borrisokane	22 Dec. - 1842	4 Jan. - 1843	7 Jan. - 1843 8 July - 1843	15 May - 1843 26 Mar. - 1844	27 Aug. 1844	7 April 1845	- - -
9	Borris-in-Ossory	6 Mar. - 1844	9 Mar. - 1844	6 April - 1844 21 May - 1844	Jan. - 1845	3 April 1846	15 June 1846	- - -
17	Boyne	8 Mar. - 1844	19 Mar. - 1844	27 Mar. - 1844 1 April - 1844	22 April - 1845	28 April 1846	22 June 1846	- - -
24	Ballybay	25 Mar. - 1846	- - -	- - -	18 May - 1846	2 July 1846	1 Aug. 1846	661 6 -
27	Brusna (Ferbane)	28 May - 1844	1 June - 1844	3 July - 1844	30 April - 1846	4 July 1846	2 Sept. 1846	- - -
28	Ballycasey	4 April - 1846	- - -	- - -	11 April - 1846	7 July 1846	8 Sept. 1846	1,067 18 -
34	Ballinhassig	28 Mar. - 1846	- - -	- - -	11 May - 1846	30 July 1846	14 Sept. 1846	4,783 12 -
39	Ballinderry	21 Mar. - 1846	- - -	- - -	11 May - 1846	28 Aug. 1846	15 Nov. 1847	855 - -
62	Ballyteigue	11 Jan. - 1843	1 Feb. - 1843	10 Mar. - 1843 17 Feb. - 1844 2 and 13 March 1844 - -	31 Dec. - 1843	20 Oct. 1846	1 Jan. 1847	- - -
64	Ballycowan	19 Oct. - 1846	- - -	- - -	7 Dec. - 1846	10 Dec. 1846	14 Dec. 1846	595 13 4
71	Broadlough	17 Sept. - 1846	- - -	- - -	24 Oct. - 1846	29 Dec. 1846	9 Jan. 1847	965 2 -
108	Boley	14 May - 1846	- - -	- - -	20 June - 1846	4 Mar. 1847	19 April 1847	995 - -
152	Ballinakill	24 Nov. - 1846	- - -	- - -	1 Feb. - 1847	18 May 1847	1 Sept. 1847	691 5 -
155	Boardsmill	11 Jan. - 1847	- - -	- - -	12 Mar. - 1847	6 Aug. 1847	1 Sept. 1847	3,344 - -
156	Ballinaskea and Castlerickarde	11 Dec. - 1846	- - -	- - -	15 Feb. - 1847	6 Aug. 1847	1 Sept. 1847	1,210 - -
172	Balla	18 May - 1846	- - -	- - -	23 April - 1847	21 Sept. 1847	16 July 1849	- - -
175	Ballynahown	19 Sept. - 1846	- - -	- - -	1 Feb. - 1847	22 Sept. 1847	25 June 1849	- - -
184	Ballinamore and Ballyconnell	1 Mar. - 1844 26 Mar. - 1844 3 April - 1844	20 Mar. - 1844	6, 15, 27 and 29 April - 1844 9, 22, 23, 25 and 29 May 1844 4 and 15 June 1844 - - 24 and 25 March 1845 - - 7 April - 1845 7 Aug. - 1845	30 May - 1845	26 June 1846	30 June 1846	- - -
189	Burren	15 April - 1846	- - -	- - -	Mar. - 1847	26 Nov. 1847	1 Aug. 1848	- - -
5	Cahore	Dec. - 1843	16 Dec. - 1843	20 Dec. - 1843 24 June - 1844	Mar. - 1844	7 Dec. 1844	30 April 1845	3,100 - -
19	Cappagh	6 Feb. - 1846 25 Mar. - 1846	10 Mar. - 1846	13 Aug. - 1846	21 May - 1846	19 June 1846	7 July 1846	- - -
33	Comogue	20 Oct. - 1844	7 Nov. - 1844	8 Nov. - 1844	16 April - 1846	29 July 1846	7 Sept. 1846	- - -
47	Clonakilty	18 Mar. - 1846	17 April - 1846	23 Mar. - 1846	10 June - 1846	7 Oct. 1846	20 Oct. 1846	- - -
51	Cork Slob	Nov. - 1845 30 April - 1846	21 Nov. - 1845	17 June - 1846	18 May - 1846	20 Oct. 1846	29 Dec. 1846	- - -
55	Carrigower	27 April - 1846	- - -	- - -	23 Sept. - 1846	30 Oct. 1846	17 Mar. 1847	3,096 - 8
67	Carrigans	17 Mar. - 1845	8 April - 1845	23 May - 1845	22 Jan. - 1846	20 Oct. 1846	8 April 1847	1,922 3 7
69	Curraunboy	19 Sept. - 1846	- - -	- - -	27 Oct. - 1846	29 Dec. 1846	9 Jan. 1847	220 - -
70	Cuilmore	19 Sept. - 1846	- - -	- - -	28 Oct. - 1846	29 Dec. 1846	16 Jan. 1847	231 - -
73	Camcloon	17 Sept. - 1846	- - -	- - -	26 Oct. - 1846	29 Dec. 1846	2 Jan. 1847	355 - -
83	Castlebar Lakes	18 June - 1846	- - -	- - -	19 Oct. - 1846	1 Feb. 1847	29 Mar. 1847	1,156 - -
107	Carbury Mill Stream	19 Oct. - 1846	- - -	- - -	18 Dec. - 1846	4 Mar. 1847	4 Mar. 1847	388 - -
110	Carrowmore Lake	28 May - 1846	- - -	- - -	24 Aug. - 1846	12 Mar. 1847	15 May 1847	505 - -
125	Clonlost	10 June - 1846	- - -	- - -	18 Feb. - 1847	19 April 1847	24 May 1847	1,635 - -
138	Castlebernard	2 Mar. - 1846	4 Mar. - 1846	4 Mar. - 1846	26 May - 1846	28 April 1847	1 May 1847	- - -
153	Cavetown	11 Jan. - 1847	- - -	- - -	8 Mar. - 1847	21 May 1847	22 June 1849	- - -
154	Curragha	18 May - 1846	- - -	- - -	6 July - 1846	19 July 1847	9 Aug. 1847	1,438 - -
159	Croghan	4 Dec. - 1846	- - -	- - -	9 Mar. - 1847	3 Sept. 1847	22 June 1849	- - -
161	Castlemartyr	16 Nov. - 1846	- - -	- - -	May - 1847	3 Sept. 1847	2 July 1849	- - -
173	Coolaney	6 Mar. - 1847	- - -	- - -	11 July - 1847	21 Sept. 1847	3 Sept. 1849	- - -
179	Cross Lough	20 Nov. - 1846	- - -	- - -	12 June - 1847	30 Sept. 1847	27 Aug. 1849	- - -
15	Dungolman	20 Feb. - 1846 22 Sept. - 1848	- - -	- - -	15 April - 1846 July - 1847	8 June 1846	18 June 1846	- - -
29	Deel	7 May - 1845	18 Aug. - 1845	18 Aug. - 1845	7 April - 1846	14 July 1846	27 July 1846	- - -
98	Dunkellin	24 Nov. - 1845	17 Dec. - 1845	12 Mar. - 1846	5 May - 1846	19 Aug. 1846	4 Sept. 1846	- - -
111	Derrylin	16 Sept. - 1846	- - -	- - -	1 Oct. - 1846	19 Mar. 1847	1 April 1847	- - -

APPENDIX B.

No. I.

with the Date in each Case, of the original Application from the Party or Parties interested: Also, where an Estimate was Also, where the Amount required for the Preliminary Survey and Estimate was subscribed, the Date when the Amount was and the Date when the full Assents were received; and also the Date when the Works were actually commenced; in each Amount actually expended; but where unfinished, the Amount of the original Estimate, and the Amount actually expended Work.

here the Work has actually been ıd the Award made:		But where unfinished:			And also a full Estimate of the Amount which will still be required for the Completion of the Works.	Area by original Survey, Statute Measure.	Area by revised Survey, Statute Measure.	—
evised Estimate, where published or irculated before calling for Second Assents.	The Amount actually expended.	The Amount of the original Estimate.	Revised Estimate, where published or circulated before calling for Second Assents.	The Amount actually expended to the 30th Sept. 1851.				
£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	A. R. P.	A. R. P.	
- - -	- - -	8,388 - -	- - -	17,820 5 10	1,883 14 -	3,240 1 33	—	
- - -	- - -	3,780 - -	4,638 2 7	3,714 12 2	245 8 6	1,130 0 0	1,161 2 36	
- - -	2,881 12 6	- - -	- - -	- - -	- - -	400 0 0	921 2 30	
- - -	12,115 16 6	- - -	- - -	- - -	- - -	3,851 0 11	3,827 2 18	
- - -	- - -	3,486 2 8	- - -	9,296 19 6	581 17 4	1,206 0 15	1,464 2 18	
- - -	- - -	6,896 - 9	- - -	17,546 17 10	771 12 7	3,232 1 2	4,000 - -	
- - -	- - -	25,706 11 10	- - -	44,825 5 10	12,069 - -	7,059 3 1	—	
- - -	848 17 4	- - -	- - -	- - -	- - -	350 0 0	414 3 27	
- - -	- - -	47,329 11 8	76,000 - -	53,726 13 6	24,793 - -	15,687 0 25	16,860 0 0	- - Stopped for second assents.
- - -	3,805 3 2	- - -	- - -	- - -	- - -	351 1 13	753 3 6	
6,944 14 5	7,844 17 1	- - -	- - -	- - -	- - -	1,513 0 0	1,484 1 20	
- - -	1,262 9 10	- - -	- - -	- - -	- - -	198 0 0	311 0 38	
- - -	- - -	18,000 - -	- - -	30,238 9 -	2,091 15 1	2,921 3 14	3,187 0 0	
- - -	729 3 2	- - -	- - -	- - -	- - -	235 0 0	215 2 29	
- - -	1,241 16 9	- - -	- - -	- - -	- - -	212 0 0	198 3 19	
- - -	2,220 14 2	- - -	- - -	- - -	- - -	312 0 0	683 0 4	
- - -	1,167 4 7	- - -	- - -	- - -	- - -	415 0 0	430 3 3	
3,660 16 9	4,191 5 3	- - -	- - -	- - -	- - -	989 0 0	1,428 3 12	
1,674 5 5	2,223 11 7	- - -	- - -	- - -	- - -	506 0 0	738 0 20	
- - -	- - -	15,299 - -	- - -	11,327 9 5	7,460 - -	4,155 0 0	—	
- - -	- - -	5,035 - -	4,963 14 7	6,669 1 7	199 7 9	1,236 0 0	1,758 2 11	
- - -	- - -	131,858 8 6	- - -	138,501 3 7	54,475 - -	6,538 1 18	—	
- - -	- - -	26,469 - -	- - -	23,552 9 6	1,821 8 11	9,635 0 0	—	
- - -	4,315 14 11	- - -	- - -	- - -	- - -	598 3 29	—	
- - -	- - -	8,531 19 6	21,265 - 5	9,101 9 -	12,691 11 4	2,927 0 0	3,621 1 12	- - Stopped for second assents.
- - -	- - -	3,094 11 7	4,583 7 6	4,082 9 7	146 19 2	1,278 2 30	1,306 2 21	
- - -	- - -	5,281 - -	- - -	9,678 17 8	20 - -	303 0 0	292 0 30	
- - -	- - -	5,860 19 2	- - -	5,593 10 5	243 3 8	230 0 0	209 1 20	
- - -	3,237 8 4	- - -	- - -	- - -	- - -	685 0 0	592 0 31	
- - -	2,475 7 10	- - -	- - -	- - -	- - -	634 2 18	634 2 18	
- - -	295 5 7	- - -	- - -	- - -	- - -	40 0 0	46 0 31	
- - -	326 13 6	- - -	- - -	- - -	- - -	63 0 0	57 3 8	
- - -	602 13 5	- - -	- - -	- - -	- - -	76 0 0	72 3 37	
- - -	1,708 6 4	- - -	- - -	- - -	- - -	189 0 0	185 2 27	
- - -	637 10 10	- - -	- - -	- - -	- - -	141 0 0	196 0 20	
- - -	796 12 1	- - -	- - -	- - -	- - -	141 0 0	199 2 30	
2,379 - -	2,406 14 3	- - -	- - -	- - -	- - -	603 1 36	648 2 5	
- - -	- - -	12,934 - -	16,778 7 11	9,727 8 6	7,565 - -	1,911 0 0	2,424 0 0	
- - -	- - -	3,142 - -	3,106 2 7	1,903 13 5	90 - -	502 0 0	824 3 14	- - Stopped for second assents.
- - -	1,264 5 9	- - -	- - -	- - -	- - -	395 0 0	407 3 32	
- - -	- - -	2,546 - -	2,931 11 2	3,273 5 6	263 8 8	539 0 0	870 0 33	
- - -	- - -	5,060 - -	6,967 4 10	5,319 - 10	1,711 16 9	1,089 3 8	1,477 2 18	
- - -	- - -	3,912 - -	3,878 9 10	4,049 - 4	586 1 11	555 2 0	792 3 18	
- - -	- - -	340 - -	- - -	353 10 1	18 - -	81 0 0	91 0 35	
- - -	- - -	6,500 - -	10,171 - -	9,907 7 4	439 19 8	1,801 0 0	2,298 3 16	
- - -	- - -	9,883 3 -	16,648 14 -	15,885 17 5	2,001 14 10	3,811 0 15	4,897 3 0	
- - -	- - -	22,500 - -	48,489 9 3	23,531 3 1	26,424 3 1	7,110 0 0	9,006 1 33	- - Stopped for second assents.
- - -	- - -	455 17 -	- - -	616 15 9	36 4 3	139 0 0	171 3 14	

(continued)

No. I.—Return of all the Works which have been commenced - - - - - -

No. of Final Notice.	DISTRICTS.	Date, in each Case, of the original Application from the Party or Parties interested.	Where an Estimate was prepared of the Cost of the Preliminary Survey, the Date when that Estimate was furnished to the Parties interested.	Where the Amount required for the Preliminary Survey and Estimate was subscribed, the Date when the Amount was received by the Board of Works.	The Date of the Completion of the Survey and detailed Estimate, in each Case (Date of Report).	The Date when the full Assents were received.	The Date when the Works were actually commenced.	In each Case finished The Amount of the original Estimate
								£. s. d.
113	Drumbominy -	16 Sept. - 1846	- - -	- - -	9 Oct. - 1846	18 Mar. 1847	1 April 1847	269 - -
162	Drumcliff - -	30 July - 1846	- - -	- - -	10 April - 1847	3 Sept. 1847	3 July 1849	- - -
164	Dunmore - -	11 May - 1846	- - -	- - -	5 Oct. - 1846	3 Sept. 1847	6 Aug. 1849	- - -
182	Dunmoran - -	7 May - 1847	- - -	- - -	20 July - 1847	26 Oct. 1847	3 July 1849	- - -
192	Derryholmes - -	12 Nov. - 1846	- - -	- - -	7 June - 1847	19 Jan. 1848	8 June 1849	- - -
81	Eslin - - -	3 Aug. - 1844	- - -	- - -	17 Oct. - 1846 5 Jan. - 1850	1 Feb. 1847	27 April 1847	- - -
7	Fane - - -	12 Nov. - 1844	31 Dec. - 1844	17 Jan. - 1845	18 May - 1845	28 Feb. 1846	2 April 1846	6,002 - -
65	Fergus - -	21 Oct. - 1844 2 Dec. - 1847	14 Dec. - 1844	30 Jan. - 1845 14 Feb. - 1846	7 Oct. - 1846	16 Dec. 1846	15 Feb. 1847	- - -
121	Foranwell - -	16 Oct. - 1846	- - -	- - -	2 Feb. - 1847	10 April 1847	10 April 1847	2,436 - -
8	Glyde - - -	8 Aug. - 1843	31 Aug. - 1843	2 and 6 Oct. 1843 - - 28 Dec. - 1843 15 Feb. - 1845	20 April - 1844 29 April - 1845	3 April 1846	11 April 1846	- - -
63	Gorteen - -	14 April - 1846	- - -	- - -	Oct. - 1846	4 Dec. 1846	8 Dec. 1846	2,605 6 -
106	Gar - - -	26 Oct. - 1846	- - -	- - -	2 Feb. - 1847	4 Mar. 1847	22 April 1847	3,543 - -
187	Glenariff River (Red Bay) -	28 Dec. - 1846	- - -	- - -	10 Feb. - 1847 29 May - 1847	23 Nov. 1847	18 June 1849	2,206 - -
58	Headford - -	9 April - 1846	- - -	- - -	12 Oct. - 1846	30 Nov. 1846	12 May 1847	471 - -
79	Hind (The River) -	6 April - 1846	- - -	- - -	Sept. - 1846	16 Jan. 1847	10 April 1847	- - -
87	Hermitage - -	16 Oct. - 1846	- - -	- - -	11 Nov. - 1846	1 Feb. 1847	4 May 1847	224 - -
36	Inny - - -	Jan. - 1846 6 April - 1846	8 Jan. - 1846	18 Feb. - 1846	25 May - 1846	31 July 1846	15 Sept. 1846	- - -
6	Kilmannock - -	April - 1843	April - 1843	23 May - 1843 12 Mar. - 1844	15 Dec. - 1843	9 Dec. 1844	1 June 1845	6,087 3 -
18	Killimor - -	1 Oct. - 1845	4 Nov. - 1845	14 Nov. - 1845 13 Aug. - 1846	27 April - 1846 4 May - 1846	18 June 1846	6 July 1846	- - -
31	Kilmaine - -	28 Mar. - 1846	- - -	- - -	13 May - 1846	22 July 1846	19 Aug. 1846	6,700 - -
41	Kilbeggan - -	17 Aug. - 1843	30 Aug. - 1843	30 Sept. - 1843 8 Nov. - 1843	18 April - 1844	4 Sept. 1846	1 Feb. 1847	- - -
54	Kilbridge - -	6 Sept. - 1844 23 April - 1846	- - -	- - -	12 June - 1846	30 Oct. 1846	31 Oct. 1846	- - -
57	Kilmurry - -	25 Mar. - 1846	- - -	- - -	12 Oct. - 1846	27 Nov. 1846	7 Dec. 1846	400 - -
78	Kill - - -	19 June - 1846	- - -	- - -	25 Sept. - 1846	16 Jan. 1847	1 Mar. 1847	- - -
105	Kilcock - -	11 June - 1846	- - -	- - -	12 Dec. - 1846	4 Mar. 1847	29 Mar. 1847	1,600 - -
112	Kinmeen - -	16 Sept. - 1846	- - -	- - -	9 Oct. - 1846	19 Mar. 1847	1 April 1847	180 - -
124	Kilmaganny - -	21 Sept. - 1846	- - -	- - -	9 Jan. - 1847	19 April 1847	1 May 1847	- - -
160	Keenagh - -	17 April - 1846	- - -	- - -	3 Mar. - 1847	3 Sept. 1847	25 June 1849	- - -
11	Longford - -	30 Aug. - 1843	- - -	31 Aug. - 1843	22 Feb. - 1844	2 June 1846	17 June 1846	- - -
12	Lorrha - -	9 Mar. - 1846	Mar. - 1846	27 Mar. - 1846	14 April - 1846	4 June 1846	29 June 1846	2,443 - -
26	Lough-na-Saggart -	24 Mar. - 1846	- - -	- - -	9 June - 1846	3 July 1846	1 Aug. 1846	434 - -
32	Lough Gara and Mantua - -	6 April - 1846	- - -	- - -	23 May - 1845	24 July 1846	9 Sept. 1846	- - -
43	Loughs Oughter, Gowna, and River Erne - -	30 Sept. - 1845	Oct. - 1845	11 and 15 Nov. 1845 - -	15 April - 1846	16 Sept. 1846	13 Oct. 1846	- - -
53	Loughans - -	June - 1843	26 June - 1843	15 Aug. - 1843 3 Oct. - 1843 4 Feb. - 1845	10 Feb. - 1844	10 Sept. 1846	1 Oct. 1846	- - -
68	Lough Neagh -	11 April - 1844	13 April - 1844	25 April - 1844 16 Nov. - 1844 20 Dec. - 1844	Dec. - 1845	31 Oct. 1846	3 May 1847	- - -
109	Leesborough - -	30 May - 1846	- - -	- - -	30 Sept. - 1846	12 Mar. 1847	1 April 1847	- - -
151	Lough Crew - -	18 July - 1846	- - -	- - -	23 Nov. - 1846	27 May 1847	7 June 1847	1,707 - -
166	Lough Dalla -	10 Aug. - 1846	- - -	- - -	Mar. - 1847	3 Sept. 1847	2 July 1849	2,504 - -
170	Lavally - -	10 Oct. - 1846	- - -	- - -	9 April - 1847	4 Sept. 1847	9 July 1849	- - -

- - - - - - in Ireland under the Acts for Arterial Drainage—*continued.*

where the Work has actually been and the Award made:		But where unfinished:			And also a full Estimate of the Amount which will still be required for the Completion of the Works.	Area by original Survey, Statute Measure.	Area by revised Survey, Statute Measure.	
Revised Estimate, where published or circulated before calling for Second Assents.	The Amount actually expended.	The Amount of the original Estimate.	Revised Estimate, where published or circulated before calling for Second Assents.	The Amount actually expended to the 30th Sept. 1851.				——
£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	A. R. P.	A. R. P.	
- - -	333 8 9	- - -	- - -	- - -	- - -	103 0 0	134 2 5	
- - -	- - -	2,968 - -	2,912 19 -	3,620 6 9	453 12 9	424 0 0	637 3 26	
- - -	- - -	40,421 - -	- - -	17,450 17 9	39,694 - -	9,803 0 0	—	
- - -	- - -	3,457 - -	3,781 8 1	4,515 15 9	198 11 2	764 0 0	881 0 35	
- - -	- - -	3,608 - -	- - -	6,652 3 11	505 13 2	2,788 0 0	5,039 3 23	
- - -	- - -	7,306 - -	9,943 8 -	10,988 8 7	548 6 2	1,855 0 0	2,400 2 15	
- - -	8,155 15 6	- - -	- - -	- - -	- - -	1,449 1 21	1,529 0 20	
- - -	- - -	44,762 - -	48,569 17 4	26,845 7 1	25,524 15 8	8,388 0 0	9,557 0 5	- - Stopped for second assents.
2,859 - -	3,475 1 8	- - -	- - -	- - -	- - -	878 0 0	928 1 20	
- - -	- - -	19,896 5 8	- - -	30,692 - 7	8,860 - -	6,887 0 3	—	
- - -	3,526 4 11	- - -	- - -	- - -	- - -	1,231 0 0	1,440 0 12	
- - -	3,816 12 8	- - -	- - -	- - -	- - -	938 0 0	944 0 23	
2,998 12 -	3,345 4 4	- - -	- - -	- - -	- - -	516 0 0	526 0 30	
- - -	1,010 12 9	- - -	- - -	- - -	- - -	166 0 0	304 1 20	
- - -	- - -	14,280 - -	17,140 5 7	14,742 5 2	14,364 4 -	2,800 0 0	3,864 2 27	
- - -	286 16 1	- - -	- - -	- - -	- - -	133 0 0	150 1 38	
- - -	- - -	34,994 - -	51,196 15 -	25,235 15 6	26,638 19 6	7,763 1 14	16,181 3 30	- - Stopped for second assents.
- - -	9,836 13 7	- - -	- - -	- - -	- - -	498 2 5	509 1 12	
- - -	- - -	25,504 15 5	37,617 17 9	40,352 8 7	3,512 19 7	6,861 0 29	8,426 1 24	
7,800 - -	10,990 10 1	- - -	- - -	- - -	- - -	1,200 0 0	1,129 3 30	
- - -	- - -	10,397 13 10	36,828 10 10	17,439 2 -	10,357 - 2	4,982 3 25	6,956 2 10	- - Stopped for second assents.
- - -	- - -	3,956 14 2	- - -	6,113 13 9	618 18 2	2,605 0 0	2,792 1 16	
- - -	938 13 3	- - -	- - -	- - -	- - -	544 0 0	369 1 22	
- - -	- - -	2,689 - -	5,034 5 9	2,351 5 4	100 - -	642 0 0	1,611 0 0	- - Stopped for second assents.
- - -	1,819 3 5	- - -	- - -	- - -	- - -	440 0 0	491 3 11	
- - -	244 10 4	- - -	- - -	- - -	- - -	73 0 0	87 3 31	
- - -	- - -	8,597 - -	- - -	7,833 1 1	1,691 - -	2,592 0 0	3,433 2 0	
- - -	- - -	9,026 - -	- - -	5,150 15 7	4,195 4 5	1,882 0 0	2,794 1 27	
- - -	- - -	14,288 - -	29,737 6 3	19,058 2 6	12,501 - -	4,424 0 0	5,389 3 30	
- - -	3,504 19 3	- - -	- - -	- - -	- - -	1,000 0 0	1,057 1 13	
- - -	683 14 6	- - -	- - -	- - -	- - -	164 3 0	193 1 38	
- - -	- - -	11,030 - -	17,430 13 7	10,480 19 2	8,421 13 7	3,003 0 0	5,475 0 35	- - Stopped for second assents.
- - -	- - -	51,969 - -	103,490 8 1	45,652 - 7	57,837 19 5	8,300 0 0	11,704 2 15	
- - -	- - -	1,802 4 6	- - -	3,385 7 -	277 18 3	529 0 13	—	
- - -	- - -	195,714 4 7	- - -	105,722 3 1	115,865 - -	26,000 1 32	—	
- - -	- - -	2,499 2 -	4,153 13 7	5,073 8 9	154 11 9	686 0 0	813 3 14	
- - -	2,753 19 8	- - -	- - -	- - -	- - -	333 0 0	489 0 34	
- - -	2,836 11 9	- - -	- - -	- - -	- - -	1,116 0 0	999 2 15	
- - -	- - -	11,780 - -	- - -	7,548 8 2	6,427 16 3	2,436 0 0	3,340 2 26	- - Stopped for second assents.

No. I.—Return of all the Works which have been commenced - - - - -

No. of Final Notice.	DISTRICTS.	Date, in each Case, of the original Application from the Party or Parties interested.	Where an Estimate was prepared of the Cost of the Preliminary Survey, the Date when that Estimate was furnished to the Parties interested.	Where the Amount required for the Preliminary Survey and Estimate was subscribed, the Date when the Amount was received by the Board of Works.	The Date of the Completion of the Survey and detailed Estimate in each Case (Date of Report).	The Date when the full Assents were received.	The Date when the Works were actually commenced.	In each Case finished: The Amount of the original Estimate.
								£. s. d.
174	Lough Mask and River Robe	20 April - 1846 26 June - 1846	- - -	- - -	6 March - 1847	22 Sept. 1847	11 June 1849	- - -
183	Loughs Corrib, Mask and Cara	21 March 1844 20 Oct. - 1846	May - 1844	14 and 22 June 1844 - -	26 May - 1846	8 Sept. 1847	1 Jan. - 1848	- - -
188	Lisduff - - -	6 March - 1846	- - -	- - -	13 May - 1847	23 Nov. 1847	11 June 1849	1,035 - -
193	Lough Lannagh -	22 May - 1847	- - -	- - -	1 Sept. - 1847	19 Jan. 1848	11 June 1849	- - -
23	Moyour - -	10 Jan. - 1846	- - -	- - -	2 May - 1846	29 June 1846	23 July 1846	3,380 - -
45	Mullyfarry - -	4 May - 1846	- - -	- - -	4 June - 1846	2 Oct. 1846	27 Nov. 1846	664 - -
60	Miles and Templebryan - -	15 May - 1846	- - -	- - -	4 Aug. - 1846	30 Nov. 1846	3 Mar. 1847	- - -
72	Mullawn - -	29 March - 1846	- - -	- - -	24 Oct. - 1846	29 Dec. 1846	16 Jan. 1847	274 - -
140	Maghera - -	11 May - 1846	- - -	- - -	June - 1846	28 April 1847	2 Aug. 1847	1,385 - -
141	Moyne and Crosspatrick - -	6 June - 1846	- - -	- - -	8 Oct. - 1846	5 May 1847	20 Sept. 1847	690 - -
176	Monivea - -	23 April - 1846	- - -	- - -	March - 1847	22 Sept. 1847	6 Aug. 1849	- - -
25	Nobber - -	1 Nov. - 1845	- - -	- - -	1 April - 1846	2 July 1846	16 July 1846	5,327 2 -
4	Oranhill - -	31 Aug. - 1843	6 Sept. - 1843	20 Sept. - 1843 8 March 1854	11 Dec. - 1843	17 Sept. 1844	14 April 1845	2,400 - -
21	Owenabrocka -	10 Jan. - 1846	- - -	- - -	22 April - 1847	24 June 1846	23 July 1846	1,800 - -
48	Owenkeagh - -	2 May - 1846	- - -	- - -	5 Aug. - 1846	8 Oct. 1846	26 Oct. 1846	1,025 3 -
59	Quin - - -	24 April - 1846	- - -	- - -	4 July - 1846	30 Nov. 1846	1 Mar. 1847	- - -
13	Redbog - -	24 March - 1846	- - -	- - -	11 April - 1846	4 June 1846	16 June 1846	688 16 -
37	Rath or Cloneen -	20 Feb. - 1846	- - -	- - -	July - 1846	19 Aug. 1846	8 Sept. 1846	- - -
49	Ratoora - -	15 May - 1846	- - -	- - -	June - 1846	8 Oct. 1846	9 Nov. 1846	590 - -
61	Rinn and Blackriver - -	12 Oct. - 1844	- - -	- - -	Aug. - 1846	1 Dec. 1846	12 April 1847	- - -
10	Strokestown - -	22 Feb. - 1843	25 Feb. - 1843	3 March - 1843 8 June - 1844	16 Nov. - 1843 15 Jan. - 1845	23 April 1846	13 June 1846	- - -
20	Shrule - - -	23 March - 1846	- - -	- - -	8 May - 1846	19 June 1846	10 July 1846	- - -
35	Shinrone - -	17 March - 1846	- - -	- - -	20 May - 1846	30 July - 1846	11 Aug. 1846	- - -
50	Shandon - -	21 April - 1846	- - -	- - -	28 June - 1846	12 Oct. 1846	21 June 1847	210 - -
74	Shandrum - -	17 Sept. - 1846	- - -	- - -	23 Oct. - 1846	29 Dec. 1846	9 Jan. 1847	685 - -
80	Sow - - -	8 July - 1843	28 Sept - 1843	9 Oct. - 1843 29 March 1845	Dec. - 1843	1 Feb. 1847	22 April 1847	5,445 - -
82	Shanagolden - -	2 May - 1846	- - -	- - -	20 June - 1846	1 Feb. 1847	8 Mar. 1847	- - -
169	Saleen Lough -	10 March - 1846 29 March - 1847	- - -	- - -	24 May - 1847	3 Sept. 1847	20 Jan. 1848	2,179 - -
14	Turloughmore -	24 Oct. - 1842	June - 1843	25 July - 1843 11 Dec. - 1843 28 Feb. - 1846	26 March - 1844	4 June 1846	9 June 1846	- -
42	Templemore - -	23 Dec. - 1842	21 April - 1843	2 June - 1843 13 Jan., 19 and 28 Feb., 5 and 15 March, and 14 May - 1844	Nov. - 1843 May - 1844	15 June 1846	15 June 1846	- -
116	Tawnawoggaun -	17 Sept. - 1846	- - -	- - -	Jan. - 1847	30 Mar. 1847	22 May 1847	1,106 11 -
139	Wilkinstown - -	8 Dec. - 1846	- - -	- - -	30 Jan. - 1847	28 April 1847	12 May 1847	1,295 - -
180	Wottonstown - -	4 March - 1847	- - -	- - -	28 May - 1847	2 Oct. 1847	14 Jan. 1850	900 - -
44	Youghal - -	2 May - 1846	- - -	- - -	6 July - 1846	2 Oct. 1846	14 Oct. 1846	- - -
					(a)			111,646 2 -

(a) In many cases of works under the provisions for summary proceedings no detailed estimates were made, nor were they required in an

(b) Revised or supplemental reports and estimates are not required by the provisions for summary proceedings, but for the information

(c) This includes 17,343 *l.* 4 *s.* 4 *d.* interest on borrowed monies.

(d) This includes a sum of 90,018 *l.* 6 *s.* 9 *d.*, estimated interest on borrowed monies, to accrue during the completion of the works.

- - - - - - in Ireland under the Acts for Arterial Drainage—*continued.*

where the Work has actually been and the Award made:		But where unfinished:			And also a full Estimate of the Amount which will still be required for the Completion of the Works.	Area by original Survey, Statute Measure.	Area by revised Survey, Statute Measure.	——
Revised Estimate, where published or circulated before calling for Second Assents.	The Amount actually expended.	The Amount of the original Estimate.	Revised Estimate, where published or circulated before calling for Second Assents.	The Amount actually expended to the 30th Sept. 1851.				
£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	A. R. P.	A. R. P.	
- - -	- - -	73,909 9 3	- - -	23,381 10 7	40,000 - -	14,886 3 0	—	
- - -	- - -	130,753 17 -	- - -	118,544 17 3	82,872 - -	20,972 0 28	—	
- - -	1,545 15 11	- - -	- - -	- - -	- - -	507 0 0	452 2 5	
- - -	- - -	12,940 - -	12,940 - -	9,282 8 2	3,970 - -	2,454 0 0	—	
- - -	8,764 1 2	- - -	- - -	- - -	- - -	700 0 0	1,040 3 11	
- - -	986 13 -	- - -	- - -	- - -	- - -	267 1 30	326 0 15	
- - -	- - -	912 14 -	- - -	1,191 19 4	314 - 3	241 0 0	—	
- - -	347 7 4	- - -	- - -	- - -	- - -	74 0 0	74 3 13	
1,675 8 9	1,397 12 1	- - -	- - -	- - -	- - -	375 0 0	393 1 22	
- - -	702 13 9	- - -	- - -	- - -	- - -	93 0 0	96 1 32	
- - -	- - -	15,919 - -	- - -	8,050 13 10	16,444 - -	3,778 0 0	—	
- - -	7,634 3 4	- - -	- - -	- - -	- - -	865 0 0	1,357 1 3	
- - -	3,871 16 2	- - -	- - -	- - -	- - -	974 0 16	974 0 16	
- - -	3,154 5 7	- - -	- - -	- - -	- - -	400 0 0	379 0 35	
- - -	1,277 7 3	- - -	- - -	- - -	- - -	405 0 0	393 2 15	
- - -	- - -	8,341 - -	18,870 19 1	11,609 14 10	7,486 - -	1,650 0 0	3,988 2 30	
- - -	964 19 11	- - -	- - -	- - -	- - -	278 0 0	241 2 8	
- - -	- - -	4,700 - -	6,797 - -	6,033 - 11	549 6 -	1,238 0 0	1,136 3 6	
926 18 1	928 7 11	- - -	- - -	- - -	- - -	288 0 0	244 1 0	
- - -	- - -	18,388 - -	23,392 8 10	13,371 18 5	10,818 12 -	4,097 0 0	5,691 1 11	- - Stopped for second assents.
- - -	- - -	17,996 7 -	- - -	30,276 19 2	5,100 - -	7,397 2 5	—	
- - -	- - -	10,302 - -	- - -	22,854 12 6	2,009 14 7	3,068 0 0	4,918 3 23	
- - -	- - -	3,908 - -	- - -	7,859 - 2	219 3 5	1,217 0 0	1,479 3 19	
- - -	1,030 12 -	- - -	- - -	- - -	- - -	40 0 0	43 1 15	
- - -	712 10 3	- - -	- - -	- - -	- - -	127 0 0	132 1 35	
7,226 19 -	8,347 18 6	- - -	- - -	- - -	- - -	1,998 0 0	1,983 0 10	- - Award prepared, but delayed by legal proceedings.
- - -	- - -	8,332 - -	12,834 - -	3,560 14 9	9,944 - -	1,012 0 0	1,638 0 28	- - Stopped for second assents.
- - -	3,079 13 11	- - -	- - -	- - -	- - -	886 0 0	906 3 14	
- - -	- - -	23,700 - -	- - -	45,763 4 8	4,917 17 1	4,881 0 0	7,700 0 0	
- - -	- - -	7,224 14 10	- - -	13,287 17 -	1,030 5 7	3,448 0 1	3,648 0 0	
- - -	1,334 - 10	- - -	- - -	- - -	- - -	314 0 0	294 1 0	
- - -	1,764 - -	- - -	- - -	- - -	- - -	373 0 0	700 2 37	
- - -	1,102 13 -	- - -	- - -	- - -	- - -	309 1 0	316 1 17	
- - -	- - -	8,811 15 -	- - -	18,240 6 1	694 17 10	220 0 0	271 2 22	
38,145 14 5 (b)	165,104 9 2 (c)	1,179,374 12 11	663,093 1 5 (b)	1,210,455 11 -	683,794 8 3 (d)	288,253 1 10	214,579 1 18	
		Add Quantity of Land originally estimated for Districts not yet revised - -					119,018 0 24	
							335,597 2 2	

case by the provisions of the Act of Parliament. *See* 9 Vict. c. 4, s. 47.

proprietors they have been, with a full explanation of each case, furnished in 41 districts, as herein set forth.

Appendix B.

No. II.

1.—RETURN of all the CASES, if any, in which there has been a Departure from the original Plan submitted to the Parties interested and approved of by them, and in which the Assent of the Parties interested to the new Plan was not obtained previous to its being put into execution.

THE total number of districts in which works have been commenced are 121.

Of these 18 have been brought under the operation of the ordinary proceedings of the Drainage Acts, and plans were published and lodged for public inspection before completing the preliminary proceedings; the remaining 103 districts were undertaken under the provisions for summary proceedings, 9 Vict. c. 4, ss. 45, 46, 47, 48, 49 and 50, for the improvement of lands, and affording remunerative employment to the labouring classes during the distress consequent on the failure of the potato crop. Under these provisions no plan was required to be lodged for inspection, or submitted to the parties interested; nevertheless, in 43 cases, diagram or sketch plans were published with the original report, but in the remaining 60 cases no plan was lodged or published.

In nearly all cases there have been, during the progress of the works, some deviations, alterations, additions and abridgments of the originally conceived plan, and especially as regards increased depth in the channels, which deviations the Commissioners are specially empowered by the Act of Parliament to make, and which would consequently bring nearly the whole 121 districts into this Return. In the 18 districts, under ordinary proceedings, no assent from the proprietors is required by Act of Parliament, or could be legally called for, used or relied upon, but that given in the first instance; nor has there been in these cases any general change of project or "new plan" beyond increasing the depth of the channels proved to be necessary for the discharge of the floods, as described in the Seventeenth, Eighteenth and Nineteenth Annual Reports of the Board of Works to Parliament. In one of these cases (Burrisokane) a majority of the proprietors memorialed that the capacity of the channels should be so increased.

As regards the 103 districts under the provisions for summary proceedings, assents are required by 9 Vict. c. 4, s. 50, to be furnished before the works can be completed, if the cost of the works exceeds an amount calculated at the average rate of 3*l.* per acre of the land to be drained. These assents have been called for in all cases where it was deemed necessary under the provisions of the Act, and have either been obtained or the final award has been made for the districts without a further expenditure on works, or the works of the district now remain suspended for want of such second assents.

2.—All CASES, if any, where a larger Area has been included in the Operations than was originally comprised in the Survey and Estimate assented to by the Parties interested.

The cases where the area has been revised pursuant to the provisions of the Act are set forth in the accompanying Return, No. 1.

3.—Distinguishing the CASES, if any, in which a larger Outlay has been made than otherwise would have been consistent with the Act of Parliament.

— Nil. —

No. III.

No. III.

RETURN of the NAMES and SALARIES of all the ENGINEERS, OVERSEERS and CLERKS at present employed on ARTERIAL DRAINAGE WORKS, 28th July 1851.

NAME.	RANK.	Rate of Salary or Pay.	Rate of Allowances in lieu of Travelling Expenses.	Name of Work or District.	Counties in which Districts are situated.	OBSERVATIONS.
Frederick Barry	District Engineer	500 *l.* per annum	100 per annum			
Thomas W. Lloyd	Pay Clerk	150 *l.* ,,	40 *l.* ,,			
George W. Mossop	District Check Clerk and Measurer	5 *s.* per diem	none	Lough Mask and River Robe, Shrule, Balla and Lough Lannagh		
Louis Ch. King	District Clerk and Storekeeper	7 *s.* ,,	none			
John M'Gough	Assistant Clerk	2 *s.* 6 *d.* ,,	none			
James Gallagher [a]	Office Clerk	3 *s.* ,,	none			[a] Discontinued.
Michael Betagh	Assistant Engineer	14 *s.* ,,	none	Lough Mask and River Robe (Creagh, Robeen, and Hollymount Divisions)		
Pat. Haviland	Superintendent	7 *s.* 6 *d.* ,,	none			
Martin Kavanagh	Overseer	4 *s.* 6 *d.* ,,	none			
Michael M'Dermott	Check Clerk and Storekeeper	3 *s.* ,,	none			
Thomas W. Armstrong	Assistant Engineer	10 *s.* 6 *d.* ,,	30 *l.* per annum	Carnarvon Division — Mask and Robe	Mayo and Galway.	
James Fox	Overseer and Check Clerk	3 *s.* ,,	none			
William B. Gallwey	Assistant Engineer	7 *s.* ,,	none	Lehinch Division — Mask and Robe		
Patrick Bulger	Overseer	4 *s.* ,,	none			
George Gray	Check Clerk and Storekeeper	2 *s.* 6 *d.* ,,	none			
William C. Bennett	Assistant Engineer	10 *s* 6 *d.* ,,	30 *l.* per annum	Balla		
Patrick Duffy	Overseer	6 *s.* 6 *d.* ,,	none			
Thomas M'Lean	Check Clerk and Storekeeper	2 *s.* 6 *d.* ,,	none			
Henry C. Forde	Assistant Engineer	10 *s.* ,,	none	Lough Lannagh		
Patrick Coffey [a]	Overseer	4 *s.* ,,	none			
Mathew Duell	ditto	5 *s.* ,,	none			
William P. Stack [a]	Asslstant Engineer	10 *s.* ,,	30 *l.* per annum	Shrule		
William Holmes [a]	Overseer	5 *s.* ,,	none			
Thomas Robinson [b]	ditto	3 *s.* 6 *d.* ,,	none			[b] Transferred to Mask and Robe, Palnasullagh Division.
John Nally [c]	Check Clerk	3 *s.* 6 *d.* ,,	none			[c] Discontinued.
Charles J. Battersby [c]	District Engineer	300 *l.* per annum	80 *l.* per annum	Inny, Dungolman, and Rath or Clooneen	Longford, Meath, Westmeath and Cavan.	
Eyre W. Preston [c]	Assistant Engineer	10 *s.* per diem	40 *l.* ,,			
John G. Kirby [c]	District Clerk	7 *s.* ,,	none	Dungolman and Rath or Clooneen		
William M'Kane [c]	Overseer	2 *s.* ,,	none			
Joseph Coneys [c]	District Engineer	48 *l.* per annum	12 *l.* per annum	Comogue	Limerick.	
Thomas Coneys [c]	Assistant Engineer	7 *s.* per diem	none			
James Dempsey [c]	Overseer	3 *s.* 4 *d.* ,,	none			
Frederick G. Deverell [c]	District Engineer	15 *s.* ,,	40 *l.* per annum	Coolaney, Drumcliff and Dunmoran	Sligo.	
Charles Johnston [c]	Office Clerk	7 *s.* ,,	none			
John C. Kennan [c]	Pay Clerk	109 *l.* 4 *s.* per an.	30 *l.* per annum			
James Kennedy [c]	Check Clerk	5 *s.* per diem	none	Coolaney		
Patrick Hoey [c]	Overseer	4 *s.* 2 *d.* ,,	none			
George Devenish [c]	Check Clerk	6 *s.* ,,	none	Drumcliff		
William Alford	Overseer	3 *s.* 6 *d.* ,,	none			
William P. O'Sullivan [c]	ditto	6 *s.* ,,	none	Dunmoran		
William Frazer	District Engineer	382 *l.* per annum	140 *l.* per annum	Castlebernard, Shinrone, Kilmaganny, Kilbride, Templemore, Loughans, Burris-in-Ossory, and Burrisokane		
Richard Woods	Pay Clerk	150 *l.* ,,	40 *l.* ,,			
Joseph E. Brennan	District Accountant	100 *l.* ,,	none			
William Morton	Copying Clerk	2 *s.* per diem	none			
Patrick Phelan	Storekeeper	2 *s.* 6 *d.* ,,	none			
Thomas Byrne	Assistant Engineer	12 *s.* ,,	30 *l.* per annum	Castlebernard and Shinrone		
Cornelius Feely	Check Clerk	3 *s.* ,,	none	Castlebernard		
John Head [c]	Overseer	2 *s.* 6 *d.* ,,	none	Shinrone	King's, Queen's, Kilkenny and Tipperary.	
John Brosnahane [c]	ditto	7 *s.* ,,	none	Castlebernard		
John S. Mason	Assistant Engineer	12 *s.* ,,	30 *l.* per annum	Kilmaganny and Kilbride		
James Burrows	Overseer	4 *s.* 6 *d.* ,,	none	Kilmaganny		
George Kelly	Check Clerk	3 *s.* 6 *d.* ,,	none	Kilmaganny and Kilbride		
Edward J. Kelly [c]	Superintendent	7 *s.* ,,	none	Templemore		
Matthew J. Coyle	ditto	7 *s.* ,,	none	Loughans		
Jeremiah Spillane	ditto	7 *s.* ,,	none	Burris-in-Ossory		
Thomas Spillane [c]	Overseer	2 *s.* 6 *d.* ,,	none			
Edward Fitzpatrick [c]	ditto	2 *s.* 6 *d.* ,,	none	Burris-o-Kane		
George R. R. Stoney [c]	Check Clerk	3 *s.* 6 *d.* ,,	none			
Lionel Gisborne	District Engineer	300 *l.* per annum	100 *l.* per annum			
James Peacocke	General Assistant Engineer and Draughtsman	10 *s.* per diem	none			
James Joyes [d]	Pay Clerk	10 *s.* ,,	part of 40 *l.* annum	Strokestown, Longford Lough Gara, and Mantua, Hind River, Keenagh, Croghan and Cavetown	Roscommon and Longford.	[d] A portion of his time employed on districts of Rinn and Blackriver, and Eslin and Shannon, rents and tolls.
George R. Crowe	District Clerk	7 *s.* ,,	none			
Francis F. L'Estrange	Assistant Clerk	5 *s.* ,,	none			
Thomas M'Dermott	District Storekeeper	2 *s.* 6 *d.* ,,	none			
John O'Flaherty	Assistant Engineer	10 *s.* 6 *d.* ,,	30 *l.* per annum	Strokestown	Roscommon.	
Boyle W. Minchin	Check Clerk	4 *s.* ,,	none			

No. III.—Names and Salaries of all the Engineers, &c., at present employed on Arterial Drainage Works—*continued*.

NAME.	RANK.	Rate of Salary or Pay.	Rate of Allowances in lieu of Travelling Expenses.	Name of Work or District.	Counties in which Districts are situated.	OBSERVATIONS.
John Shanley James M'Gurrin	Overseer ditto	5 *s.* per diem 4 *s.* „	none none	Strokestown	Roscommon.	
Samuel Harding	Assistant Engineer	12 *s.* 6 *d.* „	30 *l.* per annum	Longford and Keenagh	Longford.	
John Mollaghan Peter Finlay [a] Charles S. Dudgeon	Check Clerk Overseer ditto	3 *s.* „ 7 *s.* „ 5 *s.* „	none none none	Longford		[a] Discontinued.
John Williams John Geraghty James Doyle	Assistant Engineer Check Clerk Overseer	10 *s.* 6 *d.* „ 3 *s.* „ 5 *s.* „	30 *l.* per annum none none	Hind River	Roscommon.	
William Bond [a] Bernard Doherty [a]	Check Clerk Overseer	5 *s.* „ 5 *s.* „	none none	Keenagh	Longford.	
Charles Mayne [a] John Duignan [a]	Assistant Engineer Overseer	10 *s.* „ 3 *s.* „	30 *l.* per annum none	Croghan	Roscommon.	
Richard A. Gray [b]	District Engineer	322 *l.* per annum	62 *l.* per annum			[b] From 1st Sept. 1851, reduced 24 *l.* per annum salary and allowance.
Charles F. Ginty	District Clerk	7 *s.* per diem	none	Boyne, Deel and Clonlost		[c] Dead.
John Hastings [c]	Pay Clerk	17 *s.* 6 *d.* per payment	10 *s.* per diem while procuring silver			[d] Discontinued.
Dilmond J. Howes [d] James Mulloy [d] James Padden Joseph Ginty [d]	Assistant Engineer Overseer ditto Check Clerk	8 *s.* 4 *d.* per diem 6 *s.* „ 5 *s.* „ 3 *s.* 6 *d.* „	30 *l.* per annum none none none	Boyne	Meath, Westmeath, Kildare and King's.	
John Todd Patrick Nee John Kielty [e]	Assistant Engineer Overseer Check Clerk	10 *s.* „ 4 *s.* „ 3 *s.* 6 *d.* „	none none none	Deel		[e] Transferred to Boyne.
John W. Kelly [f]	District Engineer	400 *l.* per annum	100 *l.* per annum	Quin, Annagh and Fergus		[f] From 1st Dec. 1851, salary 1 *l.* per diem, and 50 *l.* per annum in lieu of travelling expenses, Quin and Fergus districts.
John A. Mullins [g] John Cangley John B. Knox Terence Meehan [h] John Considine Henry Molony	Assistant Engineer District Clerk Pay Clerk Overseer ditto Check Clerk and Storekeeper	10 *s.* per diem 5 *s.* „ 17 *s.* 6 *d.* per payment 3 *s.* per diem 3 *s.* 6 *d.* „ 3 *s.* 4 *d.* „	none none none none none none	Quin	Clare and Galway.	[g] No assistant engineer on this district at present. Mr. Mullins, however, is employed on it in the capacity of draftsman and measurer, at 6 *s.* per diem.
Stephen Baily [h]	Overseer and Foreman Mason	5 *s.* „	none	Annagh		[h] Discontinued.
Martin King John King	District Engineer District Clerk and Accountant	300 *l.* per annum 5 *s.* per diem	100 *l.* per annum none	Youghal, Castlemartyr, Cork Slob, Myles and Templebryan, Clonakilty and Ratooragh	Cork.	
Patrick Larkin Patrick Malone [h] William Pophrett	Assistant Engineer ditto Clerk	150 *l.* per annum 10 *s.* per diem 1 *s.* 6 *d.* „	none none none	Youghal Castlemartyr		
Peter J. Klasen [i]	District Engineer	500 *l.* per annum	150 *l.* per annum	Brosna, Kilbeggan, Killimor, Ballynahown, Derryholmes, Boley, Lisduff, Cappagh, and Foran Well		[i] At present paid at the rate of 30 *s.* per day, and only 40 *l.* per annum for travelling expenses.
H. J. B. Kane [k] Richard Willis [k]	Assistant Engineer Pay Clerk	10 *s.* 6 *d.* per diem 17 *s.* 6 *d.* per payment	30 *l.* per annum none	Brosna, Kilbeggan, Ballynahown and Derryholmes		[k] Discontinued.
A. O. Lyons	Assistant Engineer	12 *s.* per diem	40 *l.* per annum	Killimor, Boley, Lisduff and Cappagh		
Henry Green [k] Samuel M'Donnell	Draftsman ditto	5 *s.* „ 5 *s.* „	none none	On all districts above stated in charge of Mr. Klasen		
Bernard M'Donnell	Pay Clerk	1 *l.* per payment	none	Killimor		
Robert E. Morgan [k] Robert Hackett	District Clerk Assistant Clerk and Storekeeper	7 *s.* per diem 5 *s.* „	none none	Brosna, Kilbeggan, Ballynahown, Derryholmes and Foran Well		
M. J. M'Cann	Clerk	6 *s.* „	none	Killimor, Boley, Lisduff and Cappagh	King's County, Westmeath, Kildare and Galway.	
Dennis J. Kelly [k]	District Check Clerk	5 *s.* „	none	Killimor (Lisduff River)		
Alfred Buck [k]	ditto	5 *s.* „	none	Ballynahown and Derryholmes		
R. J. Boylan [k]	ditto	5 *s.* „	none	Brosna (Works between Rahan and Springfield)		
Wm. B. Schroder [k]	Overseer	4 *s.* 6 *d.* „	none	Ballynahown		
R. S. Packer [k]	ditto	5 *s.* „	none	Derryholmes		
G. A. Fayle	ditto	7 *s.* „	none	Newbridge and Lisduff Divisions	Killimor.	
John Mullins	ditto	4 *s.* „	none	Claremadden Division		
John Mason [k] Joseph Berry	ditto Check Clerk	4 *s.* 6 *d.* „ 3 *s.* „	none none	Killimor Division Newbridge and Lisduff Division		
Dennis Duffy	ditto	2 *s.* 6 *d.* „	none	Killimor and Claremadden Division		

No. III.—NAMES and SALARIES of all the Engineers, &c., at present employed on Arterial Drainage Works—*continued.*

NAME.	RANK.	Rate of Salary or Pay.	Rate of Allowances in lieu of Travelling Expenses.	Name of Work or District.	Counties in which Districts are situated.	OBSERVATIONS.
Williams D. Latimer	District Engineer	15 *s.* per diem	40 *l.* per annum			
Michael Costelloe	District Clerk	5 *s.* ,,	none			
P. J. Dowdall [a]	Superintendent	8 *s.* 6 *d.* ,,	2 *l.* per month			[a] Discontinued. Averaging about four payments per month.
Nicholas Morgan [b]	Pay Clerk	15 *s.* per payment	none	Burren	Carlow.	
Henry Donnelly [a]	Check Clerk	3 *s.* per diem	none			
John M'Kevitt [a]	Overseer	6 *s.* ,,	none			
Robert Manning [c]	District Engineer	400 *l.* per annum	100 *l.* per annum			
William Ralph [d]	District Clerk	5 *s.* per diem	none			[c] Allowance for travelling reduced to 50*l.* per annum. 1st October 1851.
Patrick Galligan [d]	Assistant Clerk	3 *s.* 6 *d.* ,,	none	Glyde, Ardee, Nobber, Wottonstown and Fane	Louth, Meath, Monaghan and Cavan.	[d] Discontinued.
William Brunker [d]	Pay Clerk	17 *s.* 6 *d.* per payment	none			
Thomas Adair [d]	Check Clerk	5 *s.* per diem	none			
D'Witt Gray	ditto	5 *s.* ,,	none			
John Murta	Surveyor and Measurer	3 *s.* 6 *d.* ,,	none			
Michael Hayes [d]	Overseer	4 *s.* ,,	none	Glyde	ditto.	
Pat. Dillon	ditto	3 *s.* 4 *d.* ,,	none			
Nicholas Keatinge	ditto	5 *s.* ,,	none			
John Callaghan	ditto	5 *s.* ,,	none			
Francis H. Lynch	Check Clerk	5 *s.* ,,	none			
Michael O'Conner	Superintendent	7 *s.* ,,	none			
James Martin [d]	Overseer	6 *s.* ,,	none	Arde	Louth and Meath.	
Christopher Dornan [d]	Storekeeper	3 *s.* 6 *d.* ,,	none			
Thomas J. Mulbanny	District Engineer	500 *l.* per annum	100 *l.* per annum			
Andrew Hanlon	Pay Clerk	150 *l.* ,,	30 *l.* per annum			
Francis Greene	Draftsman	7 *s.* per diem	none	Ballinamore and Ballyconnell, Loughs Oughter and Gowna, and River Erne, Rinn and Black River, Eslin and Leesborough	Fermanagh, Cavan, Leitrim, Longford, Roscommon and Monaghan.	
William H. Kelly	Office Clerk	7 *s.* ,,	none			
Richard Trouson	Assistant Clerk	3 *s.* 6 *d.* ,,	none			
Edward Norris	ditto	3 *s.* 4 *d.* ,,	none			
John Kielty	Copying Clerk	4 *s.* 6 *d.* ,,	none			
Marshall S. Thornton	Til and Store Clerk	3 *s.* ,,	none			
Michael M'Gurrin	Storekeeper	2 *s.* 6 *d.* ,,	none			
James Green	Assistant Engineer	12 *s.* 6 *d.* ,,	30 *l.* per annum			
Hugh Leonard	ditto	12 *s.* 6 *d.* ,,	ditto			
Robert Armstrong	ditto	10 *s.* ,,	ditto			
Martin Lyons [d]	Superintendent	100 *l.* per annum	none			
John Sutcliffe	ditto	7 *s.* per diem	none			
Patrick Kavanagh	ditto	7 *s.* ,,	none			
Hugh Latimer	Overseer	7 *s.* ,,	none			[e] Transferred to Loughs Oughter and Gowna and River Erne District.
Philip Maguire [e]	ditto	7 *s.* ,,	none			
John Magauran	ditto	6 *s.* ,,	none	Ballinamore and Ballyconnell	Fermanagh, Cavan, Leitrim and Roscommon.	[f] Discontinued.
B. Reilly [f]	ditto	5 *s.* ,,	none			
George Reilly	ditto	5 *s.* ,,	none			
John Quigly	ditto	5 *s.* ,,	none			
John M'Donald	Check Clerk	3 *s.* 6 *d.* ,,	none			
Pat. Caffrey	ditto	3 *s.* 4 *d.* ,,	none			
Thomas M'Guire	ditto	3 *s.* 6 *d.* ,,	none			
Patrick Duignan	ditto	3 *s.* ,,	none			
Thomas Mathews [g]	ditto	3 *s.* ,,	none			
Robert Elliott	ditto	3 *s.* ,,	none			
Martin Farrell	Resident Engineer	400 *l.* per annum	40 *l.* per annum			
John M'Gowan	Assistant Engineer	10 *s.* per diem	30 *l.* per annum			
William Robinson	ditto	10 *s.* ,,	none			
Andrew Palles	Superintendent	5 *s.* ,,	none			
William Finlay	Overseer	6 *s.* ,,	none			
Philip Reilley	ditto	6 *s.* ,,	none	Loughs Oughter and Gowna and River Erne	Cavan, Leitrim and Longford.	
William Francis	ditto	5 *s.* 10 *d.* ,,	none			
Tiram Flood	ditto	5 *s.* ,,	none			
Thomas Conroy	ditto	5 *s.* ,,	none			
Patrick Kelly	ditto	5 *s.* ,,	none			
John Duignan	ditto	6 *s.* ,,	none			
Edward Doyle [f]	ditto	3 *s.* 6 *d.* ,,	none			
James Brady	Check Clerk	3 *s.* ,,	none			
John Kerr [f]	ditto	3 *s.* ,,	none			
John Coghlan	Assistant Engineer	12 *s.* 6 *d.* ,,	30 *l.* per annum			
James Joyes [g]	Pay Clerk	10 *s.* ,,	40 *l.* per annum			[g] Only a portion of Mr. Joyes' time is charged to these districts, the remainder being charged to Strokestown, Longford, Hind and Keenagh.
William Coghlan [h]	Superintendent	5 *s.* ,,	none	Rinn, Black River and Eslin		[h] Discontinued.
John Roberts [h]	District Check Clerk	4 *s.* ,,	none		Leitrim and Longford.	
Michael Carroll [h]	Overseer	4 *s.* ,,	none	Rinn and Black River		
William M'Culloch [h]	ditto	6 *s.* ,,	none	Eslin		
Richard H. Coe [h]	Assistant Engineer	7 *s.* ,,	none	Leesborough	Monaghan.	

(*continued*)

No. III.—Names and Salaries of all the Engineers, &c., at present employed on Arterial Drainage Works—*continued.*

NAME.	RANK.	Rate of Salary or Pay.	Rate of Allowances in lieu of Travelling Expenses.	Name of Work or District.	Counties in which Districts are situated.	OBSERVATIONS.
Charles S. Ottley	District Engineer	500 *l.* per annum	100 *l.* per annum	Lough Neagh and Glenariff		
Herbert Taylor Ottley	Assistant Engineer	12 *s.* 6 *d.* per diem	none			
John Guise Mitford	ditto	12 *s.* 6 *d.* ,,	30 *l.* per annum			
Charles Gerrard	ditto	15 *s.* ,,	none			
Henry Gardner	Office Clerk	7 *s.* ,,	none		Antrim, Londonderry, Tyrone, Armagh and Down.	
Anthony Carroll	Overseer	6 *s.* 8 *d.* ,,	none	Lough Neagh		
Laurence Stanton	ditto	4 *s.* 6 *d.* ,,	none			
James Hughes	ditto	5 *s.* ,,	none			
Michael Nolan [a]	ditto	4 *s.* ,,	none			[a] Discontinued.
James Corrigan	ditto	4 *s.* ,,	none			
William Marshall	ditto	4 *s.* ,,	none			
Patrick Smyth [b]	Superintendent	8 *s.* 4 *d.* ,,	none	Glenariff		[b] Transferred to Lough Neagh.
Samuel U. Roberts	District Engineer	500 *l.* per annum	150 *l.* per annum	Loughs Corrib, Mask and Carra, Turloughmore, Lavally and Dunkellin		
James Collins [c]	Assistant Engineer	12 *s.* 6 *d.* per diem	none	Lough Corrib		[c] Discontinued.
Richard Kelly [d]	Pay Clerk	150 *l.* per annum	40 *l.* per annum	Lough Corrib and Turloughmore		[d] A portion of his salary charged to districts of Dunmore, Monivea and Shrule.
William H. Price	Draftsman and Assistant Engineer	7 *s.* per diem	none			
Hugh S. Thane	District Clerk	4 *s.* 6 *d.* per diem	none			
Foster Short	Assistant Clerk	3 *s.* 6 *d.* ,,	none			
James M. Merrick [e]	Mechanical Engineer	10 *s.* ,,	none			[e] Reduced to 7*s.* per diem during winter.
John Doyle	Overseer	8 *s.* 6 *d.* ,,	none			
William Molloy	ditto	7 *s.* ,,	none		Galway and Mayo.	
John Forsyth	Overseer of Masonry	6 *s.* ,,	none			
John Dowling [f]	ditto	6 *s.* ,,	none			[f] Discontinued.
David Reilly [f]	Overseer	5 *s.* ,,	none	Lough Corrib		
Thomas Hardy	Check Clerk	5 *s.* ,,	none			
Frederick C. Grome	ditto	4 *s.* 6 *d.* ,,	none			
Samuel Lewis	ditto	4 *s.* ,,	none			
John Beatty	ditto	3 *s.* 6 *d.* ,,	none			
Edward V. Ponsonby [f]	ditto	5 *s.* ,,	none			
William Mullery [f]	Storekeeper	4 *s.* ,,	none			
Eyre Hutchinson [f]	ditto	3 *s.* 4 *d.* ,,	none			
Nicholas Amas	ditto	3 *s.* 4 *d.* ,,	none			
George Newcombe	ditto	3 *s.* ,,	none			
William E. Armstrong [g]	ditto	2 *s.* ,,	none			[g] Suspended.
Ross M'Mahon [h]	Assistant Engineer	10 *s.* ,,	none			[h] Discontinued.
James J. Boylan	ditto	7 *s.* ,,	30 *l.* per annum			
Wybrants G. Olpherts	Draftsman and Assistant Clerk	3 *s.* 6 *d.* ,,	none			
Michael Lynch [h]	Overseer	5 *s.* ,,	none	Turloughmore	Galway.	
Philip Purcell [h]	ditto	4 *s.* 6 *d.* ,,	none			
Peter Feeny [h]	ditto	4 *s.* 6 *d.* ,,	none			
John Egan	Storekeeper	3 *s.* ,,	none			
Terence Smith	District Engineer	200 *l.* per annum	40 *l.* per annum			
Edward Gayer [h]	Office Clerk	5 *s.* per diem	none			
John W. C. Redmond	Pay Clerk	79 *l.* 3 *s.* 4 *d.* per annum	22 *l.* 10 *s.* per annum			
Edward Clinton [h]	Measurer	5 *s.* per diem	none	Ballyteige Lough	Wexford.	
James Heffernan	Overseer	4 *s.* ,,	none			
Laurence Glynn [h]	ditto	3 *s.* 6 *d.* ,,	none			
Edward O'Brien [h]	ditto	3 *s.* 6 *d.* ,,	none			
George Tarrant	District Engineer	300 *l.* per annum	100 *l.* per annum	Dunmore and Monivea		
Edward Stokes	District Clerk	7 *s.* per diem	none			
John Lynch	Overseer	6 *s.* ,,	none	Dunmore		
Daniel M'Carthy	Assistant Engineer	10 *s.* ,,	40 *l.* per annum	Monivea	Galway, Mayo and Roscommon.	
Thomas Hendrick	Overseer	6 *s.* ,,	none			
William Clutterbuck	Surveyor	7 *s.* ,,	none	Dunmore		
R. O. B. Coppinger	Check Clerk	5 *s.* ,,	none	Monivea		

Appendix C.

Comparative Statement of the Rainfall in the under-mentioned Places in Ireland, from 1st January to 15th February (inclusive) 1852.

DISTRICTS.	PLACE of OBSERVATION.	RAINFALL.			MAXIMUM RAINFALL.						OBSERVATIONS.
					For 24 Hours.		For 5 consecutive Days.		For 10 consecutive Days.		
		Month of January.	1 to 15 February, inclusive.	Total from 1 January to 15 February inclusive, 46 Days.	Dates.	——	Dates.	——	Dates.	——	
EASTERN:		*In. dec.*	*In. dec.*	*In. dec.*		*In. dec.*		*In. dec.*		*In. dec.*	
Lough Neagh	Toome	4·97	3·78	8·75	4 February	0·72	1 February to 5 February	1·83	3 February to 12 February	3·22	
	Belfast, Linenhall	5·07	3·63	8·70	12 February	0·88	8 February to 12 February	1·77	3 February to 12 February	3·22	
	Belfast, Waterworks	5·35	3·54	8·89	12 February	0·99	8 February to 12 February	1·80	27 January to 5 February	2·89	
Clyde	Castlebellingham	2·71	1·55	4·26	3 February	0·58	30 January to 3 February	1·06	27 January to 5 February	1·61	
Ardee	Ardee	4·76	2·45	7·21	4 January	1·03	31 January to 4 February	1·39	2 January to 11 January	2·10	
Ballyteigue	Ballyteigue	3·96	0·58	4·54	14 January	0·55	7 January to 11 January	1·00	7 January to 16 January	1·99	
CENTRAL:											
Ballinamore and Ballyconnell.	Ballyconnell	7·12	3·92	11·04	24 January	0·91	1 February to 5 February	1·89	3 February to 12 February	3·16	
Loughs Oughter, &c. and River Erne.	Belturbet	7·33	4·44	11·77	4 February	1·00	1 February to 5 February	2·43	15 January to 24 January	3·40	
Ballinamore and Ballyconnell.	Ballinamore	4·20	2·52	7·42	2 February	0·68	2 February to 6 February	1·51	12 January to 21 January	2·29	
Loughs Oughter, &c.	Butler's Bridge	4·35	2·34	6·69	3 January	0·58	2 February to 6 February	1·16	16 January to 25 January	1·75	
Ballinamore and Ballyconnell.	Drumaleague	4·42	3·12	7·54	14 January	0·65	1 February to 5 February	1·70	1 February to 10 February	2·60	
Loughs Oughter, &c.	Killeshandra	5·23	3·31	8·54	12 February	0·64	2 February to 6 February	1·70	1 February to 10 February	2·39	
Strokestown	Strokestown	6·64	3·40	10·04	4 January	1·11	4 January to 8 January	1·63	3 February to 12 February	2·80	-- There are different registries for this station. The gauge on the ground indicates about 25 per cent. more than the elevated gauge.
	Newtown Forbes	6·94	4·30	11·24	4 January	1·13	1 February to 5 February	2·03	1 February to 10 February	2·95	
Longford	Longford	6·10	3·23	9·33	4 January	0·70	2 February to 6 February	1·75	27 January to 5 February	2·73	
Hind	Roscommon	12·93	7·57	20·50	22 February	2·03	19 January to 23 January	4·30	31 January to 9 February	6·14	
Boyne	Kinnegad	4·14	3·14	7·28	12 February	0·55	1 February to 5 February	1·89	1 February to 10 February	2·19	-- This gauge is elevated 16 feet. One on the ground at the same place indicates about 15 per cent. more fall.
Brusna	Tullamore	4·08	3·32	7·40	5 February	0·70	2 February to 6 February	2·20	29 January to 7 February	2·90	
Brusna	Ferbane	5·89	4·02	9·91	5 & 12 February	0·76	1 February to 5 February	2·15	27 January to 5 February	3·33	
Burris-in-Ossory	Burris-in-Ossory	5·95	2·90	8·85	22 January	0·74	20 January to 24 January	2·13	27 January to 5 February	3·11	
WESTERN:											
Lough Mask and River Robe.	Hollymount (Farmhill)	7·59	4·32	11·91	8 January	0·75	1 February to 5 February	2·15	27 January to 5 February	3·65	
Lough Corrib	Cong	7·12	4·82	11·94	1 February	1·20	4 January to 8 January	2·34	3 January to 12 January	4·12	
Dunmore	Tuam (Brooklawn)	8·04	4·20	12·24	4 February	0·84	1 February to 5 February	2·52	27 January to 5 February	3·72	-- This gauge is on the ground. A gauge at the same place, elevated 11 feet, indicates results 25 per cent. less.
Lough Corrib	Ma'am	12·71	5·34	18·05	20 January	2·00	18 January to 22 January	4·81	12 January to 21 January	6·20	
Lough Corrib	Galway	21·87	8·61	30·48	31 January	2·53	29 January to 2 February	8·26	24 January to 2 February	13·27	
Fergus	Ennis	7·90	4·04	11·94	5 February	1·16	22 January to 26 January	3·08	20 January to 29 January	4·35	

Appendix C.

CONTINUATION of STATEMENT by W. T. MULVANY, Esq., referred to in the Answer to Question 1086.

IN continuation of the second class of subjects (the Estimates and Designs of Works, with the Causes of Excess and Change), I have shown that, previous to the commencement of the drainage operations in Ireland, there was no such accumulation of facts and available data as to the fall of rain and discharge of maximum floods as would determine with certainty the depth and capacity which should be given to river-courses to carry off, within their limits, the floods from catchment basins of different area, form, construction and aspect —that there was a greater dearth of such information as regards districts situate in different localities, as, for instance, in the West of Ireland, compared with those in the East, in which the first drainage works were commenced; whilst there were literally no available data as to the alterations that would result, and the amount of the increased floods which would be consequent upon opening the river channels, with all the tributary streams and main outlet drains throughout given extents of catchment basin.

Every year the Board have been accumulating facts on this subject, as the progress of the works afforded the means; and some of the results are exhibited in the Schedules of Rainfall and Discharge for the Western, Central and Eastern districts, signed "Wm. Forsyth," which I have handed in—(*see* p. 145).

I also beg to hand in the annexed tabular Statement (*see* preceding page), explanatory of the diagram which I exhibited on the 18th instant, showing the extraordinary fall of rain within the first 46 days of this year, and to call attention to the large amount of rain which fell in different districts within five or ten consecutive days.

These documents prove the impossibility of arriving at perfect certainty in designs for such works before such facts and data (and, indeed, much more in progress of collection) have been accumulated or obtained; whilst, as regards a large and most important class of the facts, they could only be obtained from the actual progress or completion of the works themselves.

The difficulties arising from the want of a registry of such facts (continued, as they should have been, for a long series of years) met us in the earliest stage of the proceedings, and the gravity of these difficulties increased with increased experience. I explained, on the 18th, the means we took to obtain success, consistently with the avoidance of too extensive works or excessive expenditure; we adopted the tentative process; which, it appeared to us, and which we are still convinced, was the soundest, most economical and most applicable to such a state of things; and I have only to add that, in nearly all cases where it has been within our control to complete the works, we have attained success; and in the few where additional works have been required to accomplish the object, those works have been executed as cheaply, or nearly so, as if they were originally included in the design; whilst I entertain no doubt that it was wiser and cheaper to adopt, under such circumstances, this course, rather than to excavate a channel so large as that, under no circumstances, could it fail to be sufficient.

This increase in the capacity of channels, proved to be necessary by the information I have now afforded, forms an important cause of excess in estimates. In addition are the numerous causes I recited under the head of Summary Proceedings, on the 18th instant, and also the addition of large sums to afford improved water-power and prime moving machinery to mill-owners (amounting in one district to 20,000 *l.*), likely to be required by them, some additional works of navigation,—neither of which are charges upon the lands drained,—and sums necessarily expended in the purchase of fisheries and other property, with steam dredges, railways, waggons, machinery and other plant, which will ultimately return a large portion of their first cost. These causes of excess are detailed in the "General Correspondence on Arterial Drainage, Ireland," laid before Parliament, pages 351 to 362 inclusive.

The whole of the causes of excess may be briefly classified as follows:—

1. Causes of excess beyond the control of the Board of Works, such as suspensions of works for want of funds,—waiting for Grand Jury presentments and second assents, —increase of interest on borrowed money,—working measures as a means of relief,—accidents, floods, &c.; compensation, or compensation works, &c.; occurrence of rock and material not expected,—subsidence of land, &c. &c.

2. Same causes as enumerated in No. 1, with additional causes within the control of the Board of Works, such as increased extent of works to benefit increased quantity of lands; extra works, or depth of channel rendered necessary, by increased knowledge as to amount of flood, to ensure success, with maintenance of works, &c.; extra works for navigation and improvement of mill-power, not chargeable to drainage proprietors; plant and tools to be sold, and property purchased, which will be worth the cost; all of which, it is expected, will produce commensurate benefits to the proprietors.

All these causes of excess have been repeatedly brought under the notice of Parliament and the proprietors in the Board's Annual Reports, and will be found substantially explained as they occurred or developed themselves—in 1846, in the Fourth Annual Report on Drainage, pages 8 and 10; in 1848, in the Sixteenth Report of the Board of Public Works, pages 21 and 22; in 1849, in the Seventeenth Annual Report, pages 37, 38 and 39; and in 1851, in the Nineteenth Report, pages 47, 48, 49 and 50.

But of the causes beyond control, none operated so injuriously, in many ways, as the suspensions of unfinished works.

Thus the works were partially suspended in 1847, from diminution of funds and the state of the money market, and stopped almost entirely in 1848, from the same causes, and the disturbed state of the country. Then only a partial supply of money was available in the

the middle of 1849, and funds could only be finally provided with a certainty in 1850, or the completion of works already commenced.

No estimates,—even those most carefully prepared in the ordinary times, not to speak of the approximations which, as explained, were only required and made under summary proceedings,—could stand such interruptions in the case of such works, with the actively destructive power of running water or floods on unfinished works.

Meantime these suspensions operated injuriously in other ways. The population, which was so dense in 1847 as to have supplied an ample amount of labour to finish off most of the districts during that and the following years (and thus, whilst parties were anxious for the works, would have given satisfaction), was, from want of employment, distress and other causes, led to leave the country in large masses. The proprietors became apathetic or disgusted, and alarmed at the depreciation in value of landed property, and less anxious to complete the measures of improvement they themselves so zealously initiated and urged forward; and when we were enabled to resume, we had a positive insufficiency of labour; and, instead of support, very frequently experienced opposition from the promoters.

It would be easy enough to make estimates that could not be exceeded, or in ordinary times to do just such an amount of work as the estimate would suffice for; but it is quite clear that either course would be inconsistent with the duties of a public Board. The first would lead to an excess of cost over the real value of the work done, whilst the latter would fail of accomplishing the object sought.

The risks of any works under water are so well and generally known to practical and professional men, that persons of high eminence as engineers and contractors have said to me, that the proper course would be, after entering "every conceivable item of expenditure and incidental expense at its full value, then to double the whole, would be about safe;" and I have little doubt, if the general contract system were adopted, it would be found to be necessary to do so. But we have adopted a different system;—one perhaps less favourable to ourselves personally, as far as present popular approbation is concerned, but we believe one more in accordance with our duty, and decidedly more calculated to ensure economy, as the results of the actual cost of the drainage works and the contrast with general contract works will prove.

We called attention to this view of the subject in 1849, in our Seventeenth Annual Report, page 39, as follows:

"In concluding this subject, the Board think it right to state, in contravention of what appears to them a popular error, that whilst it would be quite practicable for them to give orders, and for their professional officers to prepare estimates so large that they scarcely could be exceeded in the expenditure, they conceive it would be a very injurious practice, more so even than the opposite course; for it has generally been found, in the control of extensive works, very difficult to prevent an expenditure to the full amount of the estimate; whilst every item in excess is thoroughly canvassed, and the officers and every party concerned are directly taught to feel that their characters are staked on the issue."

In reference to the question of consulting the proprietors before incurring excess of estimate:—

If considered dispassionately, and with a full knowledge of all that has been heretofore given in evidence, it will be perceived that there is much misunderstanding on this subject. It is freely admitted by every one to be expedient and proper to afford every possible useful information to the proprietors; and it is a matter of right and law for them to see the accounts kept in Dublin, which are at all times available for the purpose. Practically, most of this information is afforded every year in the published Reports to Parliament, which the Board have often desired to have circulated; but until the present year, they could with difficulty obtain a sufficient number of copies for their principal officers. If these reports had been circulated and read by the proprietors, many of the complaints that have by degrees grown up into an angry feeling would have been obviated. Information is also repeatedly afforded on official visits,—in conversation,—and whenever it is sought; whilst the engineers have been instructed to give every information in their power to local parties, and in effect have done so to a very great extent, whenever the parties take sufficient interest in the matter to visit the district works, or the office of the engineer.

In the case of works for an individual property, it is simple enough to consult and confer on matters of this kind; but where numerous properties, sometimes more than a hundred, are involved in a single measure, the convenient course of conference ceases to be applicable.

In reference to any more official or legal notice of excesses over estimates, it may be observed,—

First. In administering the law for the benefit of all parties for whom we are trustees, (inclusive of the lenders of money, private and public, whose security depends upon a strict administration of the law), it has always been laid down as a principle that we should not do as a formal or legal act any thing but what the law required. We, therefore, cannot take assents a second time in ordinary proceedings, nor would they be conclusive either for or against any course.

Second. In the greatest number of districts, including the greatest extent of lands to be drained, and which are under summary proceedings, we practically and legitimately do consult the proprietors when the expenditure amounts to the limit of 3 *l.* per acre, and when requiring the second assents for the completion of the works.

Third. It has been shown in the Correspondence, Annual Reports and Evidence, that a large portion of the excess consists in increased expense of gradual occurrence from causes

Appendix (C.)

over which the Administrative Board had no control. Most of this class of causes were publicly known, and especially to the proprietors or their agents and local parties, who witnessed the suspension of works, and frequently complained to us or our officers on the subject.

Fourth. As regards the class of extended works to benefit an increased quantity of land: —whilst such works serve greatly to lessen the expense on the promoters, it may be observed that they are, in the great number of cases, fully described in the supplemental reports distributed to the proprietors, and frequently sought for by the parties locally interested. In this class may be included works for improved mill-power, &c. not chargeable on the drainage proprietors, but upon the mill or water power created or benefited.

Fifth. As to deviations, there is much misunderstanding:—

Practically, there have been no large or sweeping alterations from the original project, nor any general change of plan, as, I believe, has been assumed. The works of these drainage districts extend over large tracts of country, many miles in length, and often into two or more counties. Modifications of the line of channel, increased depth and capacity of channel near the outlets, and of drains in long reaches of low flat lands, have been made gradually, as the necessity was proved, to effect the object of drainage. But, except the change of the site of a great regulating weir at Galway, and a lock near Coleraine (under the eyes of the local parties), the extension of the line of navigation up to the town of Ballinrobe (memorialed for by the parties interested), and the alteration of a line of small river-course through a bog of Sir William Verner's, near the Blackwater, in the county of Armagh (on which I personally conferred with his son, and had his concurrence), I cannot recollect any measures constituting a great deviation or change of plan.

It is true that the increase of the size and depth of channels and main drains increases the expense, and in some cases very materially; but whilst the change has been made gradually, as the accumulation of facts from our registries and observations required, the results have clearly proved that we have, in no such instance, sanctioned too large a scale of work, or one that would not be adequately remunerated for by the increased advantage, and I have a conviction that this advantage will be fully admitted, in cases now complained of, a few years after the work has been completed, as it has been already admitted in similar instances.

As trustees for all the permanent interests in the land, as well as the life-estate of the present proprietors, trustees for the lands of proprietors who were neuter, or opposed to the drainage, and trustees for the lenders of money, the Board of Works are bound, both by law and equity, to produce a successful result, and complete drainage, so far as matters are within their control, and as the improvement in the lands shall be worth the cost. To ask from the proprietors assents not provided by law, and by which the Board, or lenders of money or other interests in the land, could not be concluded in any way, would be a mockery to the proprietors; and it would be a dereliction of duty on the part of the Board, if, notwithstanding their conviction of the necessity for the proposed deviation, they were influenced by the want of assents from some or any of the proprietors to omit the execution of works necessary to complete the drainage.

As regards the provisions for summary proceedings, and the questions proposed to me on the 18th instant, with reference to the extent to which they were applicable, I beg to explain, that of the 103 districts in which works were undertaken, the original estimates exceeded 3 *l.* per acre in 71 districts, and in some of these amounted to nearly double that sum; yet the proprietors possessing a majority of the acres voluntarily assented to the drainage of their lands, with the published reports before them, showing these approximate estimates in excess of the limit of 3 *l.* per acre.

No doubt was ever entertained by us as to these provisions extending to districts which would cost more than 3 *l.* per acre. Indeed, the words of the 45th and following sections (9 Vict. c. 4), and especially the 50th, show that the Legislature contemplated that, in many of the cases, additional expenditure would be necessary "for the further carrying on, execution and completion of the drainage."

Of the 13 districts in which works are now suspended for second assents, the original estimates exceeded 3 *l.* per acre in 10. In two out of the 13, the Supplemental Reports are not as yet published, and the parties are consequently not yet called upon to furnish their assents. In two others, we have for a long time had nearly a majority of second assents to the completion of the works; but, for want of assents for a few acres increased debt and injury to the works have been accumulated.

In four of the 13, the expenditure to the present time exceeds the original estimate, and in nine it is considerably under the original estimate; whilst in all, we are convinced, the increased productiveness of the lands will, under proper management, repay the whole cost.

Having been asked, on the 18th instant, as to the course likely to ensure the completion of the unfinished works, I wish to explain, that as there is no allegation that we have acted contrary to law (which, if we did, would become a subject for some high legal tribunal to decide upon competent evidence and construction of the meaning of the Acts of Parliament as a whole), I can see no course so suitable as—

1. The distribution of our Annual Reports, and the Evidence taken before this Committee, amongst the proprietors.

2. In the few districts in which differences or doubts exist, that the proprietors should meet, and appoint a committee of three or more of their body, with full powers to act for them and pledging themselves to abide by their decision.

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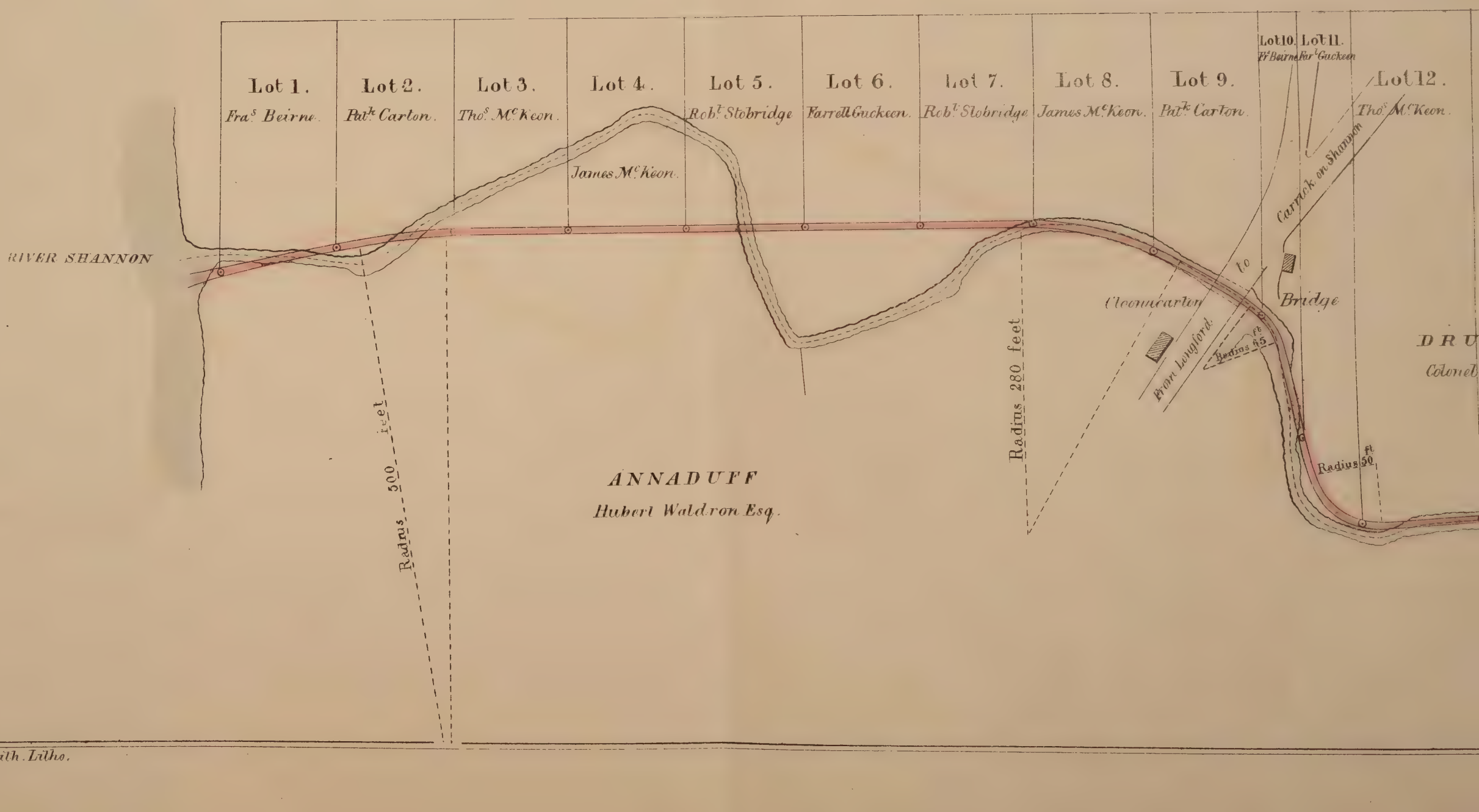

J. Arrowsmith. Litho.

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Henry Hansard, Printer.

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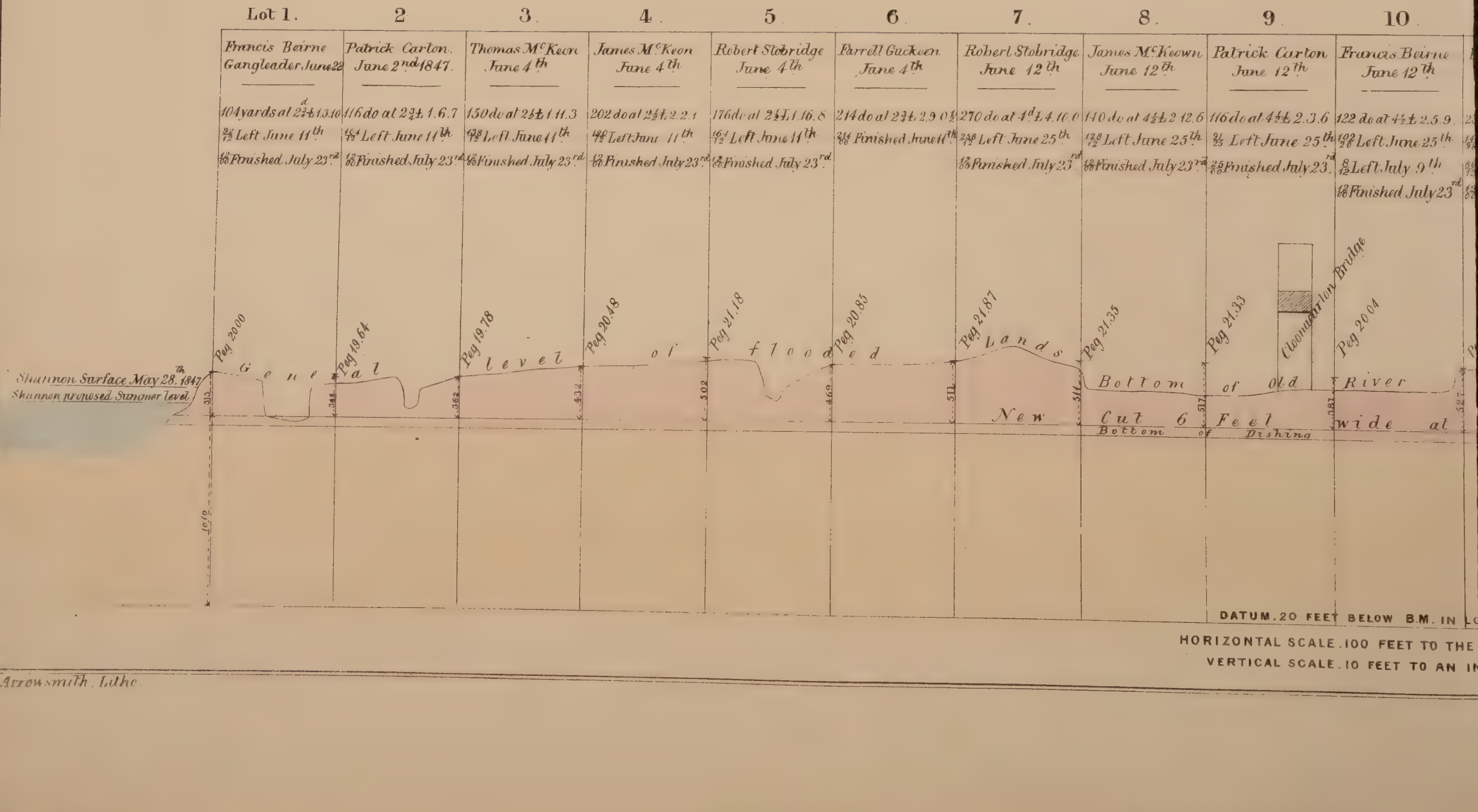


J. Arrowsmith. Litho.

PLAN Nº 2

[*To face Page* 202]

'AGE

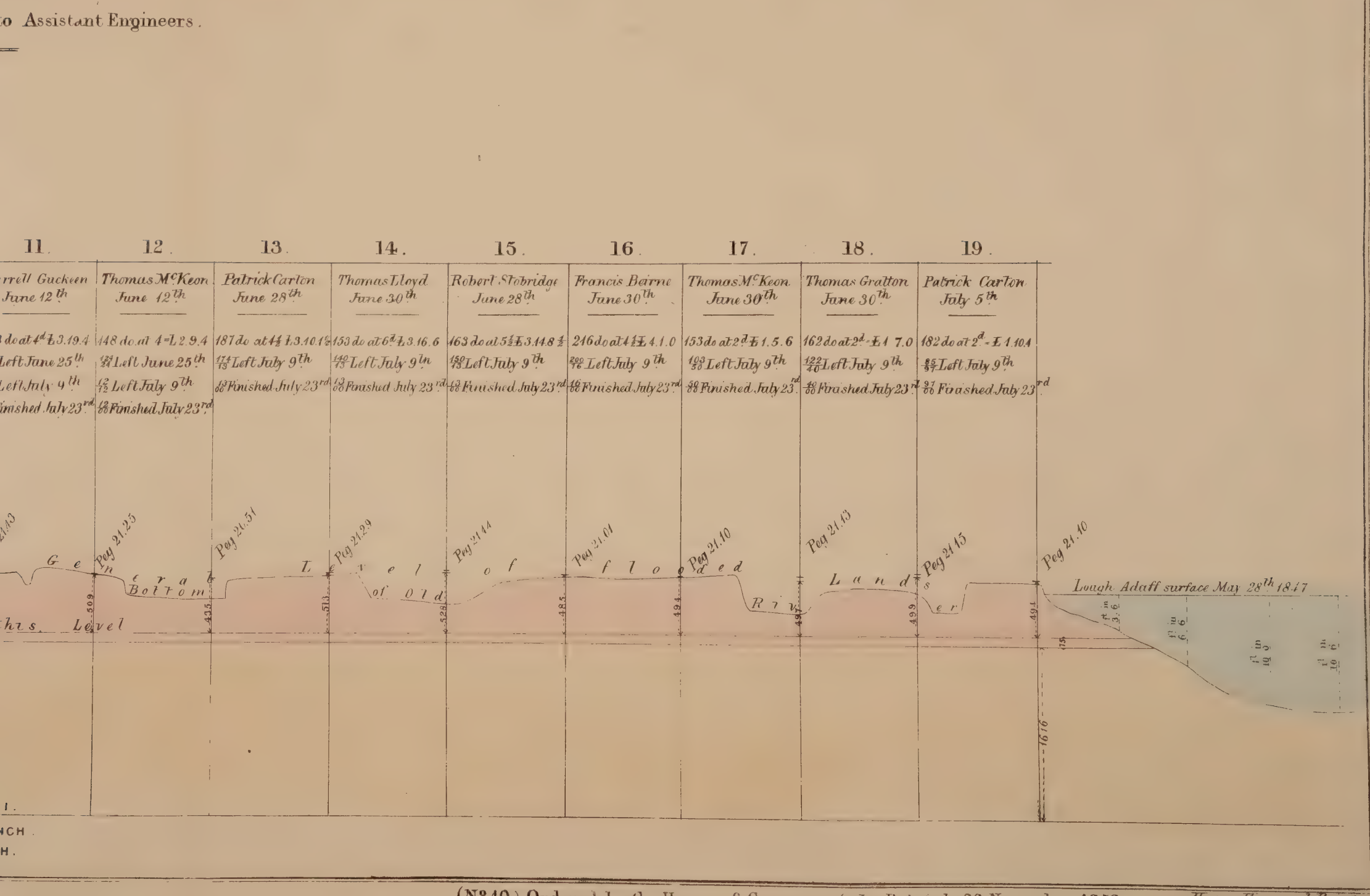
WORK SECTION.

DISTRICT.

NON TO LOUGH ADAFF.

SION,

o Assistant Engineers.



(Nº 10.) Ordered, by the House of Commons, to be Printed, 22 November 1852. *Henry Hansard Printer*

That this committee should confer with the Board of Works, having any assistance they deemed necessary; freely examine the whole of the accounts of their own district, and obtain information as to the several operations, the plans and project for the work, the estimates for its completion, and every other matter affecting the interests of the proprietors. I have no doubt whatever that a committee of men of business-like habits entering into the subject, with a desire to bring about a decision for the completion of the works, would soon arrive at a conclusion which would be satisfactory to themselves, and within our powers and duty to approve and carry out.

This appears to me to be the legitimate course. The Board of Works, as administrators of the law, are of course prepared and ready to investigate every cause of complaint or objection brought before them; and it appears but right and just that, in their capacity of arbitrators and trustees between the various interests, and guardians of the private and public monies entrusted to them, such a course should in the first instance be tried. There are many cases where it has succeeded, when entered on with the *bonâ fide* intention of finishing the works.

I submit that any other course except that of a Parliamentary Committee is liable to great misconstruction; calculated still further to protract the completion of the works; and, whilst adding most injuriously to the debt on the lands, tends to jeopardize the security of large sums of private and public money advanced on these works.

3. *The System of executing the Works, the actual Cost of the Works, and the Comparison of both with the general Contract System and Cost of other Works.*

The general system of executing the works is that of the direct employment of the labourers and tradesmen immediately under the Board's engineers and their subordinate officers, assistant engineers, check clerks, overseers and time-keepers. This system was adopted from the very commencement of these operations as the most suitable, economical and controllable, and we were influenced in selecting and organising it by the experience of the difficulties and expense of the general contract system in waterworks.

This drainage system was alluded to in 1844, in the 2d Annual Report for Drainage, page 12, and described more fully in 1845, in the 3d Report, pages 14 and 16, and still more fully in 1846, in the 4th Annual Report, pages 11 and 12; the extracts from which reports are printed in the Correspondence on the Brusna (Ferbane) Drainage District, pages 47 and 48, to which I beg to call attention.

The task system is, in fact, a system of small contracts, made directly with the labouring classes, without the cost to the measure and the profit to himself which a contractor would require for the use of his time and capital.

The details of the system are set forth very fully in the printed circulars and instructions issued to the engineers, assistants, overseers and check clerks, and may be said mainly to consist of dividing the work into small lots or parcels, which are marked on the ground, and on the working plans and sections, and detailed in the measurement books. The excavations of the whole or a given portion of a lot are let at a fixed price or sum, set down in writing on a printed form called a Docket, to a gang of men, through their leader, who is selected by themselves generally, and who is to receive their pay, and distribute it equally amongst them.

See Diagrams annexed, (Nos. 1 & 2), issued with the Instructions to the Engineers.

The measurements are made by the assistant engineer or superintendent, and checked by the check clerk, and payments made during the progress are generally endorsed on the docket.

The measurements of work done are made fortnightly, or every half month, and the amounts due entered on pay-sheets. I have here plans, sections, measurement books, dockets and pay-sheets, through the whole of which can be traced each transaction; and any more detailed information which your Lordships require can be given.

The establishment for paying is separate and independent from that for executing the works; and this fact, combined with the smallness and individual character of each transaction, the number of checks and the great number of parties concerned, with the ultimate protection afforded by the readiness with which parties would complain, or even enter into litigation, if any fraud were perpetrated, constitute, in our opinion, as a whole, the most safe and effectual system of check. In fact, in carrying it into operation on so extensive a scale, frequently having as many as 20,000 men per day employed, the instances are very few indeed that have come under our notice of abuse; whilst the advantages in the relative cheapness of the works are remarkable, and the improved habits of the people, resulting from the training and discipline, are numerous, and so generally admitted that a great number of proprietors have adopted a similar course with reference to the execution of their own private works, to an extent neither known nor perhaps practicable before in Ireland.

The advantages of this task system are detailed in the Board's Annual Reports: in 1849, in the 17th Report, pages 42, 238, 239, 241, 250, 251 and 252; in 1850, in the 18th Report, pages 45, 46, 49, 157, 158, 160, 163, 167, 169, 178, 179, 181 and 182; in 1851, in the 19th Report, in pages 46, 59, 117 and 154.

The great advantage in the system, besides the saving of expense, is that, with properly qualified and well-trained officers and overseers, alterations and improvements can be effected with facility, and without any greater expense than their actual cost; which renders it peculiarly well adapted for such a class of works as the river drainages, which are peculiarly liable by their nature to risks, accidents, and difficulties, which, even with the most experienced, cannot be foreseen or guarded against until they develope themselves in the progress of the works.

Appendix (C.)

It is also deserving of observation that, in extensive public works such as railways, private companies have of late, in some instances, modified the system of large contracts for gross sums into one of letting by a schedule of prices; and it is averred that, where they have officers in whom full reliance can be placed, they have found it the most judicious. This course, I am informed, was adopted on the Galway Extension Line, which is considered one of the cheapest railways in Ireland; and a similar course, I understand, exists on the Tipperary and Waterford Line, now in progress of execution.

In reference to the actual cost of the Arterial Drainage Works throughout Ireland, I have had numerous schedules prepared, as correctly as so large a mass of information could be collected in the time that has intervened since we had notice of the appointment of this Committee. From these schedules, I have had the annexed Abstract (p. 216) prepared, which shows in one line the total cost of the works under different heads, in the 72 districts for which final awards have been made; and in another line the total expenditure, to the 31st December last, on works in the remaining 49 districts for which awards have not been made; whilst the total column exhibits the conjoined expense of both, and the average cost per cubic yard of the measured earth and rock excavation, inclusive of engineering, superintendence, the cost of most of the unwatering, plant and tools, materials used in the works, and incidental expenses of forming slopes, soiling, &c., to be but $6\frac{3}{4}$ *d.*

In the second part of the Abstract, I have, with a view to further explanation of the actual cost of these works, and comparison thereof with other public works, added to the cost, as above explained, of the measured earth and rock excavation, the interest accumulated on the whole of the expenditure, the cost of the whole preliminary expenses, compensation and purchase of property, law expenses, advertisements, valuation and other incidental expenses; and yet it will be seen that the average cost per cubic yard amounts but to $8\frac{1}{4}$ *d.*

Whilst the measures which have cost the amounts set forth in these Abstracts include many works of a light or small and cheap character, they also include the heaviest and most important works in Ireland, inclusive of the most expensive works for the improvement of the navigation of the Lower Bann, the Junction Navigation from Lough Erne to the Shannon, the Lough Corrib works, heavy works of sea embankment at Ballyteigue, Kilmannock, Youghal, Cork and Clonakilty, the opening of several large rivers, and cutting through deep and long hills of rock in Galway and Mayo, subject to all the risks and accidents of waterworks, and under all the difficulties, which have been so fully and frequently described, of the famine, suspension of works, accumulated interest at high rates, &c.

The cost of engineering and staff superintendence on the works, for the last four years, has been kept separately, and is shown in the following Return to amount to $8\frac{1}{4}$ per cent. on the expenditure, independent of interest on borrowed monies.

DRAINAGE SUPERINTENDENCE STAFF, for Four Years.

YEARS.	Total Expenditure for each Year.	Interest on borrowed Money for each Year deducted.	Expenditure chargeable with Superintendence.	Salaries and Allowances.	Per Centage on Expenditure, exclusive of Interest.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£.
1848 - -	199,381 12 8	20,013 8 6	179,368 4 2		
1849 - -	225,875 8 7	25,181 10 1	200,693 18 6		
			380,062 2 8	35,886 18 7	$= 9\frac{2}{3}$
1850 - -	357,503 18 3	33,275 14 9	324,228 3 6	22,339 18 1	$= 6\frac{9}{10}$
1851 - -	280,950 11 10	42,281 9 10	238,669 2 -	19,737 10 2	$= 8\frac{1}{4}$
TOTAL, 4 Years -	1,063,711 11 4	120,752 3 2	942,959 8 2	77,964 6 10	$= 8\frac{1}{4}$

These are results which, by persons acquainted practically with the execution of such works, under even favourable circumstances, would be deemed reasonable, and by many unusually so; whilst my experience would lead me to the conclusion that they could not be obtained by any general system of contract, and that they prove distinctly to be cheaper than any other public works of the kind, that I am aware of.

This will, however, be best seen by a comparison between these average prices, together with the maxima prices paid by the Board for earth and rock excavations, and the prices actually paid for similar works on the Shannon, with which we were ourselves acquainted, and which prices resulted from contracts that had been open to public competition, after the most careful and detailed surveys and plans had been made, and specifications elaborately prepared.

For this purpose I have placed the items in juxtaposition in the following Statement of the Comparison of the Cost of Works:—

COMPARISON

COMPARISON of the COST of WORKS.

Arterial Drainage, Ireland, by Task or Small Contract System under Board's Engineers.	Price per Cubic Yard, Earth and Rock Excavation.	Shannon and Railway Works, by General Contract System by Public Competition.	Price per Cubic Yard. Earth.	Price per Cubic Yard. Rock.
ACTUAL COST.	*d.*	SHANNON WORKS, in Water:	*s. d.*	*s. d.*
1. In 72 districts, for which awards have been made, of the measured earth and rock work, inclusive of engineering, superintendence, most of the unwatering, plant, tools, materials used in the works, and incidental expenses of slopes, &c. &c. - -	5¼	Prices actually paid to contractors, exclusive of engineering, Board's superintendence, interest on borrowed money, compensation, law or other incidental expenses:		
(Maxima in above districts, 10¾ *d.* and 1 *s.* per cubic yard.)		Shoals from Shannon Bridge to Athlone, inclusive - - - - - - -	1 –	2 2 to 2 6
		Shoals from Lanesborough to Tarmonbarry - - - - - - -	1 4½	—
		Rooskey and Jamestown District, let to second contractor at - - - and he failed.	1 1	2 3
2. Ditto in 49 districts, in which the awards have not yet been made, but including the heavier and most expensive part of the works - -	7½	Shoals at Shannon Bridge:		
		Loose gravel, with clay and boulders -	1 1½	—
		Concreted gravel, requiring powder -	1 9½	—
(Maxima prices for works of a district in the above 49 districts, for earth and rock, are 1 *s.* 1¾ *d.*, 1 *s.* 3½ *d.*, 1 *s.* 5½ *d.*)		Limestone rock in situ - - -	- -	2 3½
		At Derryholmes (Shannon):		
		Clay, gravel and boulders, and limestone rock - - - - - -	1 –	2 6
Prices for works quite similar to the Shannon:		At Tarmonbarry:		
Earth, 9 *d.*, 9¼ *d.*, 10¾ *d.*, 11 *d.*		Clay, gravel and limestone rock -	1 –	1 10½
Rock, 1 *s.* 6 *d.*		At Lanesborough:		
Rock (whinstone), 1 *s.* 10½ *d.*		Clay and gravel - - - -	– 11	—
Earth and rock, 1 *s.* to 1 *s.* 2½ *d.*		Boyle Water:		
		Earth and limestone - - -	1 – to 1 1	2 1
3. Average of the above for 35,516,747 cubic yards of earth and rock - -	6¾	RAILWAY WORKS—Work generally dry, and free from risk:		
		English—North Union, Douglas contract - - - - -	1 3	—
		Ribble - - - - -	– 11	—
Adding to No. 1 the whole of the interest on borrowed monies in the 72 districts, preliminary expenses, compensation and purchase of property, law expenses, advertisements, valuations, &c., the cost of measured earth and rock work, inclusive of the other items in No. 1, amounts to - - - - - -	6½	Lancaster and Preston -	1 –	—
		Blackburne, Darwin and Bolton - - -	– 10	—
		Earth, shale, &c. -	- -	1 2½
		Rock - - - -	- -	1 9½
Ditto to No. 2, amounts to - - -	8	IRISH RAILWAYS:		
Average for 35,516,747 cubic yards -	8¼	Dundalk and Enniskillen - - -	– 10	2 1½
		Great Southern and Western - -	1 –	—
		Midland Great Western (the cheapest) -	– 8 to 8¼	1 9
		(*See* Mr. Dargan's Schedule of Prices.)		

In this statement it will be observed that the price paid on the Shannon and other public works named therein, only includes the sum actually paid to the contractor, and independent of the cost of engineering, Board or Company's superintendence, interest on borrowed monies, compensation, law and other incidental expenses.

The comparison, as may be perceived, is very much in favour of the cost of the drainage works under all their disadvantages; but it will appear still more so, when compared with the

Appendix (C.)

the dry works of railways comparatively free from risk, and even with the price paid for one of the cheapest railways in Ireland, that from Athlone to Galway.

A comparison might also be instituted between the cost per mile of the earth and masonry works of the drainage and other water works, or the earth and masonry works of railways; but to be complete, the parallelism of the cases should be first established.

It may, however, be noted, that I am informed on competent authority—

	£.	
The Grand Canal in Ireland cost - - - -	18,610	per mile, Irish.
Royal - - - ditto - - - - - -	19,750	ditto.
The Ulster Canal, about - - - - -	5,000	ditto Statute.

Much complaint has lately been made that we declined to have the drainage works executed by the general contract system, and when the subject was pressed, we called simultaneously for opinions from all the engineers engaged in the service, many of them experienced in the general contract system, and others who had been contractors themselves on an extensive scale. Their nearly unanimous opinions, expressed in their written reports, were opposed to its applicability to the works of this service, whilst its adoption might save themselves much anxiety and trouble in the details of the works.

The previous comparison of the actual prices paid proves the correctness of the opinion, and shows the grounds upon which the Board felt bound, as trustees for all interests, to have the works executed on the best and cheapest plan, which their professional skill and experience could devise.

It is erroneously conceived that the contract system affords a safeguard against excess of estimates; but the following examples of works executed on the Shannon under the most careful system, the fullest public competition and a strict form of contract, administered by a special commission, consisting of Sir John Burgoyne, Mr. Griffith and Colonel Jones, show that in such works so liable to risk, alterations and deviations arising out of unforeseen difficulties, the general contract system is not even a guaranty against exceeding the amounts contracted for. Indeed it is well known not to be so in railways and other works of that class over water; and hence the occasional adoption of a schedule of prices as adverted to already.

Comparison of the Amounts contracted for after Public Competition, with the actual Cost of Works on the River Shannon.

NAME OF WORK.	Amount of Contract.	Actual Cost.	Excess on Contract.	——
	£. s. d.	£. s. d.	£. s. d.	
Parteen, excavation -	2,000 – –	4,991 11 –	2,991 11 –	- - This work had to be taken from the contractor, and finished by the Commissioners.
Skarriff, quay and excavation.	2,500 – –	3,650 6 5	1,160 6 5	- - This work had to be taken from the first contractor, and let to a second, who finished the work.
Meelick, lock, weir and excavation.	31,358 8 1	43,161 7 –	11,802 18 11	
Banagher, bridge and excavation.	27,593 11 10	40,820 1 –	13,226 9 2	
Athlone, bridge, lock, weir and excavation.	49,374 6 3	79,860 5 11	30,485 19 8	- - The lock and weir portions of this work had to be taken from the first contractor and let to a second, from whom it was again taken, and finished by the Commissioners.
Shoals from Lanesborough to Tarmonbarry, 11·4*d.* per yard.	10,615 18 10	15,230 10 7	4,614 11 9	- - The average contract price per yard was 11·4 *d.* The actual cost was 16·3*d.* per yard.
Tarmonbarry, lock, weir, bridge and excavation.	20,525 9 5	26,945 14 6	6,419 5 1	
Rooskey, lock, weir, bridge and excavation.	20,846 13 –	26,495 1 2	5,648 8 2	
Jamestown, bridge, shoals, canal, and Lough Nanogue.	32,197 11 1	42,804 15 8	10,607 4 7	
Boyle, water, lock, weir, bridges and shoals.	22,417 8 5	29,962 8 –	7,544 19 7	

4. The Results or Improvement effected in the Lands.

The benefit derived or capable of being derived from any measure in reference to the expenditure thereon is naturally the test of its success, and the experience obtained hitherto justifies the opinion that in this sense the whole of the drainage measures undertaken (with but few exceptions) will afford benefits fully commensurate with the expenditure, and, taking into consideration the mode of repayment by instalments extending over from 12 to 40 years, according to the circumstances of the case, they will afford the means of repaying both the capital and interest with the exercise of ordinary industry in the use or cultivation and further improvement of the lands, to which the drainage has afforded facilities of an outlet.

It is not meant that in every case, or in every part of Ireland, or instantaneously after the arterial drainage operations, these results will follow; still less that under the recent depression of lands, increased rents to a commensurate extent, or in some instances, perhaps, to any extent beyond the original (often high) rents, will be obtained. These, it is conceived, are not necessarily tests, either of the actual improvement, or power of improvement afforded, nor of the value of such improvement.

Allusion is made in the Brusna (Ferbane) correspondence, and also in questions put by the Committee, to the allegation that the cost of the drainage exceeds the fee of the land itself, or of land in the neighbourhood. Even if the allegation be well founded, it is clearly not a test of the value of the improvement, and still less of the cheapness, or otherwise, of the works which have produced it. Much more than the value of the fee of land is repeatedly laid out upon it with profitable results, and frequently with an amount of profit increasing in an inverse ratio in proportion to the former badness of the land or lowness of the fee-simple. Thus the fee-simple value of a portion of tidal slob land, or a marsh near a river, may be literally nothing, and yet, after an expenditure in drainage, &c. far exceeding the fee-simple of the adjacent lands (not to confine the question to the slob or marsh), it may become so valuable as by its produce to repay the whole capital and interest in a few years, and to remain afterwards permanently more valuable per acre per annum, than the adjacent lands referred to. This is instanced in the Kilmannock slob, near New Ross, county Wexford (where the cost was 19*l.* 6*s.* 6*d.* per acre, and the lands, after being enclosed, were let for 3*l.* 10*s.* per acre), and in other cases referred to in the annual reports.

It is quite true that the effects of the famine, the subsequent distress, and the operation of other depressing causes have, in some remote districts, during the last few years, made, for a time, any lands, however valuable in their nature, of little value in the shape of rents or other return to their owners; and though a change is evidently in operation, it may, in such districts, be some time before the full increased value consequent upon the drainage will be derived. It is also true that, in many instances, the proprietors who are to repay the cost, and have not the lands in their own hands, may, for some time at least, be without receiving any further benefit than in the security of having the rents better paid, owing to the increased ability of the tenants from the full enjoyment of the drained lands, whilst, in some instances, where the tenants or proprietors, from want of capital, are unable to avail themselves of these benefits by stocking the lands or works of cultivation, the proprietors may be in a still worse condition.

But it is submitted that none of these, however to be regretted, are tests of the improvement or the value of the works. Most of them have arisen from causes subsequent to the commencement of the drainage, and some may shortly pass away; but the only just and true test is the increased productiveness, or power of increased productiveness, given to the lands by the drainage, to be illustrated and proved by the benefits which have been already obtained on similar lands, whether by the occupiers or the proprietors.

Again, it is to be observed that many of the lands drained yield spontaneously improved or increased crops of grass or meadows; others change their herbage gradually and slowly, though surely, if left to nature; and the process could be materially and beneficially expedited by a little aid in minor draining, top dressing, &c. by the owners; whilst a third class would remain unproductive, or a *caput mortuum* for years, if nothing else but the removal of the waters were done. I have witnessed throughout Ireland numerous instances of each class. Where the lands required further operations, and the parties either could not or did not make any exertion for their improvement, great dissatisfaction existed at almost any portion of the expense being levied on them; whilst in the very same neighbourhood lands of precisely the same character of soil, and under the same circumstances as to their former condition, had been cultivated, and crops of such an amount in value taken from them, even before the making of the final award, as would have much more than paid in one sum the whole cost of the drainage charged upon these lands, though in fact the award allowed of its being repaid by instalments extending over many years.

The price at which some of the poorest of these lands have been let in what is called "conacre" for the mere growth of a crop of potatoes during the last and present years, the value of rape crops taken from "cut away boggy" bottoms, the value of oats, mangel and other crops, and even of grass in the feeding of stock in remote districts in the west, contained in the following quotations of facts, reported from different districts in different parts of the country, will best illustrate the benefits conferred on the producing powers of the lands drained.

Appendix (C.)

Commencing with Districts in the West of Ireland :—

In reference to Oranhill district, the following is the report of facts by a private gentleman, confirmatory of the report of Mr. Harding, the Board's principal valuator:

"ORANHILL DISTRICT, COUNTY GALWAY.

"In a conversation which I had with Mr. Roberts some few weeks ago on the subject of the Lavally drainage, I mentioned to him my belief that many of the parties who were interested in that work were deterred from giving their second assents by the very unfavourable reports which were abroad respecting the system, or rather the enormous expense of the system of arterial drainage, generally speaking; and I also stated to him that an uncle of mine was called upon to pay a sum of 486 *l.*, or thereabouts, for the alleged improvement of about 30 acres of bottom-land or turlough in the Kilmain drainage district, county of Mayo; that he offered the fee of the land to the Commissioners for the sum claimed by them, and that they would not accept it.

"After mentioning this case to Mr. Roberts, I observed that I hoped it was an exception to the general rule relating to the arterial drainage of this country, and that I was disposed to believe that in many instances where good was really done, it was not acknowledged; and, as one of my reasons for so believing, I stated to Mr. Roberts that being much interested in the Lavally drainage as the owner of nearly the entire of the Willmont turlough, and having heard so much against the system, I resolved upon inspecting some lands which were alleged to have been improved by arterial drainage; and as the lands of Mr. R. L. Athy in the Oranhill drainage district were the most convenient to me, I went upon them early in the month of April last; they were then quite dry, and upon them were grazing some black cattle. In a small field near them I saw a flock of sheep attended by a man who told me that he was a herd of Mr. Athy. I asked him some questions respecting the lands over which I had just walked, and the substance of his replies was, that previous to the drainage these lands were set at a bulk rent of about 12 *l.* a year to Mr. Athy's tenants, as they were useless to any one except for two or three months in summer; that he himself often rowed a boat over them in the winter and spring months; that during the last summer they fed from 30 to 40 head of black cattle, and about 200 sheep, and that the sheep he was then feeding, about 170 in number, were grazing on them all the winter, save two or three weeks in February last, when they were removed to Mr. Athy's demesne, where there were some sheep cocks. I have never had any conversation with Mr. Athy on this subject, neither do I know at this moment either the quantity of land improved for him, or the sum claimed by the Commissioners of Public Works for its improvement.

"Eyre-square, Galway,
7 June 1852."

"EDW. M. DAVIES."

"ORANHILL.

"The portions of the townlands of Oranhill and of Renville East, called the Turlough, contains 172 A. 3 R. 36 P. statute. This turlough was, previous to the year 1844, held in common by 30 persons occupying the uplands adjoining, at a rate of 15 *l.* a year. They paid in proportion to the number of cattle that each had on it. In the year 1844, Mr. Athy took it into his own hands, and let it for grazing at the rate of 3 *s.* 6 *d.* per month; it could never be engaged for a longer period. Previous to the drainage, it would feed from 60 to 70 full-grown beasts for whatever length of time they could remain on it; sometimes one, two, three, and, on rare occasions, four months; two months being about the average.

"On the 26th of September 1848, I again examined those lands previous to making award, and was accompanied by the same Roger Fahy, who told me that the turlough still continued in the occupation of Mr. Athy, who took grazing cattle, and kept some of his own on it also. Fahy estimated that it would then graze 100 'collops' at 2 *l.* 10 *s.* (the price charged), making the produce equal to 250 *l.* per annum.

"I met Patt. Coog, the herdsman employed by Mr. Athy, on this turlough, and he told me it would graze 60 collops at 2 *l.* 10 *s.* = 150 *l.*, and that it was fully as cheap at that amount as it was in the old time at 15 *l.* per annum.

"On the 8th of February 1849, Mr. Athy told

And now in Mr. Athy's occupation.
R. HARDING.

This information I procured at my first examination of those lands previous to the drainage works, on the 13th of May 1844, from Roger Fahy, sen., one of the persons who rented the turlough at 15 *l.* per annum.

R. HARDING.

The herdsman knew who I was, and am sure that his statement to me was more likely to be under than up to the value of the turlough in its improved state.

R. HARDING.

told me that this turlough would then feed from 30 to 40 collops during the summer six months; that each would pay from 6 *s.* to 8 *s.* per month = 73 *l.* 10 *s.*; and that before the drainage, the turlough was never worth more than from 10 *l.* to 18 *l.* per annum. Taking the average of his statement, the turlough is, on his showing, more than five times its original value.

"The herd's statement to *Dr. Davies of what this turlough fed in the summer of 1851, brings the produce up to 160 *l.*, without taking any account of what it fed during the winter.

"My own opinion is, that the turlough is capable of feeding in an excellent manner 70 'collops' during the summer six months, at 2 *l.* 10 *s.* each = 175 *l.* per annum. I would not count any thing for winter season at the above figures.

"The uplands of Oranhill and Renville East, and the entire of the lands of Cottage and Parkroe, were in the occupation of tenants even at the time of making the award.

"The annual charge on all Mr. Athy's lands is 98 *l.* 6 *s.* 8 *d.* The annual charge on the turloughs in his own occupation would be 71 *l.* 14 *s.* 6 *d.*

"If we add the value according to Mr. Athy's own statement to me of this turlough before the drainage, to the annual charge on all his lands, we shall have 14 *l.* + 98 *l.* 6 *s.* 8 *d.* = 112 *l.* 6 *s.* 8 *d.*; and deduct this latter sum from the produce of the turlough in his own possession, it leaves him an annual profit of more than 60 *l.*, and leaves him an annual profit of over 100 *l.*, after paying the portion of the charge which this turlough would be liable to.

"Seventeenth Annual Report, page 260, has these observations, but not so fully.

"Office of Public Works,
11 June 1852."

"R. Harding."

This statement bears out my observation, that what was told me was under rather than up to the full improved value.

R. Harding.

* *See* Dr. Davies' Statement annexed (p. 30.)

In reference to the Dunmore and Monivea districts, situate near Tuam, County Galway, and the works of which have only partially progressed, Mr. Tarrant, the Board's district engineer, states the following facts:

"Drainage Commissioners' Office, Brooklawn, Tuam, 2 June 1852.

"Dunmore District, County Galway.

"Ballygaddy.—John Daly has, upon 50 statute acres of the turlough and 10 acres of upland adjoining, 400 sheep and four head of black cattle.

"The above turlough was generally under water for 11 months out of the year.

"From 40 to 50 head of cattle were feeding on the above 60 acres for the greater part of the last summer and winter.

"Garden Field.—James Kirwan has, upon 80 statute acres, 40 head of cattle; 60 acres of this turlough were flooded for 10 months in the year, and 20 for 9 months: about 20 head of cattle were fed on the above lands during last summer and winter.

"Pollacorragune.—John Duffy has 26 statute acres, five of which were flooded 11 months out of the year; these are now tilled with a very fine crop of potatoes, and no manure used: the remaining 21 acres, which were flooded for nine months, have now 26 head of cattle feeding on them.

"About 20 head of cattle were fed on the above lands during the last summer and winter.

"Kilcreevanty.—Charles Grant holds 50 statute acres, 16 acres of which were totally valueless, being a lake and quagmire for the whole year; the remaining 34 acres were flooded for nine months out of the year: 17 acres are now under meadow, and 17, with the above 16, have 21 head of cattle feeding on them: last summer and winter about 15 head of cattle were fed on the above 34 acres.

"In the townland of Pollacorragune there are 35 statute acres, held under the Court of Chancery, the crop of which will now be certain, and not liable to be carried away, as was frequently the case before the drainage.

"John and Thomas Browne, in the townland of Kilcreevanty, between Fartamore Bridge and Kilcreevanty, hold about 100 statute acres, flooded for nine months in the year;

Appendix C.

20 acres of the above are now in meadow, and on the remaining 80 are 50 head of cattle feeding; about the same number were fed on those lands during last winter; the above lands would feed about 20 head of cattle more than the number on.

"Between Faitamore Bridge and Kilcreevanty, in the townland of Faitamore, Lough Aclaureen, and Pollacorragune, there are 90 statute acres which were flooded for nine months out of the year, and have now 50 head of cattle feeding on them; and fed last winter the same number.

"The whole of the above lands for the three uncertain months previous to the drainage operations fed about the same number as they do now for the entire year.

"The meadow-lands are greatly improved in quality, being now as good as any upland, and the after-grass will be available for the entire year.

"Monivea District, County Galway.

"In the townland of Common, about 14 statute acres, held by James Browne, fed 14 head of cattle from last October to March, during which period, previous to drainage operations, they were flooded.

"At Armagh, about 200 acres of land, held by Mr. Bodkin, fed 300 sheep and 40 head of cattle, from October to March, during which period, previous to the drainage operations, the lands were flooded.

"G. Tarrant, District Engineer."

"W. T. Mulvany, Esq.
Commissioner, Public Works, Dublin."

In reference to the central parts of Ireland, Mr. Klazen, district engineer, in addition to his previous annual reports, published in the Brusna (Ferbane) correspondence, furnishes in his annual report for last year the following information as to the Brusna (Ferbane) District, King's County.

"Drainage, Brusna (Ferbane) District.

"Extract from Annual Report of P. J. Klasen for the Year 1851, dated 14th February 1852.

"The lands, in every case where advantage by tillage has been taken of their relieved state, have produced crops far beyond the expectations of the proprietors or owners: a few instances are subjoined.

NAME of PARTY sowing Crop.	Nature of Crop.	Extent of Land under Crop.	Average Return per Acre.	Average Value per Acre.	Average Value of Land before drained.	Amount of Tilling and Sowing.	Net Profit per Acre.	Total Profit.	Observations.
		A. R. P.	*Bars.*	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	
Mr. Ramsbottom -	Rape -	7 0 0	12	8 8 –	– 10 –	2 – –	5 18 –	41 6 –	- - This was sown on Cloghatanny tributary, to junction with River Brusna.
Ditto - - -	ditto -	14 0 0	- -	- -	– 5 –	- -	- -	- -	- - This crop was sown this present year 1852, and, consequently, nothing can be said of its produce; it is in full growth, and promises well.
Mrs. Grennan - -	ditto -	4 0 0	- -	- -	– 10 –	- -	- -	- -	Sown in September last.

"There are a few more instances of success on the above division (where the land was tilled, &c.) this present year, which, previous to drainage operations, were complete failures.

"From Ballycowan to Tullamore the benefit to the land is most apparent; the callows are now perfectly free from water, but no part of them has been broken, as they are all preserved for meadow, the increased value of which is, on the average, about 7 *s.* per acre.

"The extensive callows along the river between Tullamore and Ballymooney have been so far benefited as to permit of their being broken and ploughed. Two acres of rape were sown along the river's edge last season by Mr. Wyer, on which there is at present an excellent crop growing; and about one mile from the town of Tullamore, along the river, six acres also of rape have been sown last season by Mr. Delamore. He (Mr. D.) is most anxious to break more of his callows this season, but as the effects of backwater are very sensibly felt (owing to the weir to Molloy's mill in Tullamore, which still remains), he is compelled to abandon this idea until the weir has been removed or lowered.

"The callows between Ballymooney and Logmore are being broke by Mr. Odlum for a crop of rape; 13½ acres have been sown with flax.

"A letter

"A letter (of which the subjoined is a copy) I received from Samuel Robinson, Esq., of Clara:— Appendix C.

'P. J. KLASEN.

'Respected Friend, Clara Mills, Clara, 22d of 1st Month 1852.

'I received thy note, inquiring how my late flooded field, near Clara, turned out in tillage; I have the pleasure of informing thee I had a good crop of oats; the straw was five feet long, carrying a fine head of oats, I believe 18 barrels per Irish acre. While the river was sinking, I had about five acres sewered on the celebrated Nelson plan for draining land. This year I have on the same ground sown the Den oats (a second crop), as the sods were not sufficiently decomposed to lay it down with Timothy grass, having been under water, I suppose, 1,000 years, and the herbage worth very little, and so closely matted that it was difficult to plough. The field, from being worth very little, I expect will soon be one of my best for feeding lambs and hoggets, when I apply 40 bushels of bone-dust per Irish acre; but the bone manure would be of no use until the soil was drained, and I could not drain until the river was sunk. The sinking of the river is barely sufficient to carry off our floods.

'This morning the banks are covered, but we expect it will run off in 24 hours.

'I know of no person for 20 miles along the Brusna valley, except one most useful proprietor, Robert Holmes, Esq., who has availed himself of the river sinking, and who has informed me of his having very extraordinary produce, very much superior to what he expected.

* * * * * * * * *

'I regret 1851 has been lost by the works on the river being suspended, and our people so badly off from the want of employment.

'I am

'Respectfully, thy Friend,

(signed) 'SAMUEL ROBINSON.'"

* * * * * * * * *

Mr. J. O'Flaherty, resident engineer, has carefully ascertained the quantity of land under crop this year in the Strokestown district, county Roscommon, and the prices or rents at which the same has been let as "conacre," as follow :—

Strokestown District.

Return to show Amount of Crops raised on Drained Lands, and Profit on same, as required per Mr. Commissioner Mulvany's Letter of 7 May 1852.

Table No. 1, shows the extent of Land tilled this year, 1852, and describes the kind of Crops sown.

Description of Crop raised.	No. 1 Division, Irish.	No. 2 Division, Irish.	No. 3 Division, Irish.	No. 4 Division, Irish	No. 5 Division.	Nos. 6 & 7 Divisions, Irish.	No. 8 Division. Irish.	No. 9 Division, Irish.	No. 10 Division, Irish.	No. 11 Division, Irish.	Nos. 12 & 13 Divisions, Irish.	No. 14 Division, Irish.	Ballinafad Turlough, Irish.	Coggles Turlough, Irish.	Total Area of Crops.	
															Irish Measurement.	Statute Measurement.
	A. R. P.	A. R. P.	A. R. P.	A. R. P.		A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.
1. Potatoes	78 0 0	4 0 20	44 3 20	22 1 0	There is no	126 3 20	12 2 0	28 1 0	29 3 0	3 3 0	40 1 0	45 1 20	22 0 0	58 3 0	516 3 0	837 0 0
2. Oats	0 2 0	0 2 0	11 0 0	6 0 0	land flooded	32 2 20	0 2 0	1 0 0	3 0 0	2 2 0	7 3 0	33 2 0	24 0 0	13 1 0	136 0 20	220 2 0
3. Turnips	1 2 0	2 0 0	- -	- -	or injured	- - -	0 1 20	- -	0 2 20	- -	1 2 20	23 3 0	- -	0 3 0	30 2 20	49 2 0
4. Rye	0 3 0	- -	- -	- -	on this Di-	0 3 0	- -	- -	- -	- -	- -	22 0 0	- -	- -	23 2 0	38 0 0
5. Bere	2 0 0	- -	- -	- -	vision.	- - -	- -	- -	- -	- -	- -	0 3 0	- -	- -	2 3 0	4 1 32
6. Rape	- -	- -	- -	0 2 0	- - -	1 2 0	- -	- -	0 1 0	- -	- -	26 0 0	- -	- -	28 1 0	45 3 0
7. Wheat	—															
8. Flax	- -	- -	- -	- -	- - -	- - -	- -	- -	- -	- -	0 0 20	- -	- -	0 0 10	0 0 30	0 1 8
9. Cabbage	0 0 20	- -	0 0 10	- -	- - -	0 0 12	- -	0 1 5	- -	- -	- -	- -	- -	- -	0 2 7	0 3 20
10. Hay	- -	- -	- -	- -	- - -	- - -	- -	- -	- -	- -	- -	- -	- -	- -	- - -	500 0 0
11. Stock	- -	- -	- -	- -	- - -	- - -	- -	- -	- -	- -	- -	- -	- -	- -	- - -	5,000 0 0
12. Mangold Wurzel	—															

Table No. 2, shows the Amount of Conacre Lettings this year, 1852, for Potatoes only, there being no Conacre left for any other Crop.

Number and Division.	Let at £. 6 per Irish Acre.	Let at £. 5. 10 s. per Irish Acre.	Let at £. 5 per Irish Acre.	Let at £. 4. 10 s. per Irish Acre.	Let at £. 4 per Irish Acre.	Let at £. 3. 10 s. per Irish Acre.	Let at £. 3 per Irish Acre.	Let at £. 2 per Irish Acre.	Total Number of Irish Acres.	Total Amount of Conacre Rent.	Average Letting per Irish Acre.	Total Number of Statute Acres.	Average Letting per Statute Acre.	Remarks, stating whether this Conacre is set by the Proprietor, or by the occupying Tenant, &c.
										£. s. d.	£. s. d.		£. s. d.	
1. Gillstown	9	4	19½	- -	13	- -	- -	- -	45½	225 10 -	5 - -	74	3 1 -	- - In this division all the occupying tenants have leases, and have sublet the conacre land.
3. Clooncunny	- -	- -	3	2	3	- -	7	- -	15	57 - -	3 16 -	24	2 7 6	- - In this division the conacre is sublet by the occupying tenants, though some of them have no lease.
9. Flaskey Branch	- -	- -	- -	- -	- -	5	- -	- -	5	17 10 -	3 10 -	8	2 3 9	- ditto, who have no lease.
10. Shad Lough	- -	- -	- -	- -	2	- -	8½	- -	10½	33 10 -	3 4 -	17	2 - -	- ditto, though some of the tenants have no lease.
12. Loughnatryna and 13. Fairymount	- -	- -	- -	- -	15	- -	- -	3½	18½	67 - -	3 12 6	30	2 4 8	- ditto - - ditto.
14. Strokestown River — Coggles Turlough	- -	- -	1½	- -	9⅓	2	16	- -	27⅓	93 - -	3 7 6	45	2 1 4	- ditto, who has a lease. - - In this place, the proprietor, Mr. Nolan, has let 10 Irish acres, but the remainder is sublet by the tenants, who have no leases.
	9	4	24	2	42½	7	31½	3½	123½	501 - -	4 1 -	200	2 10 -	

16 June 1852.

John O'Flaherty,
Resident Engineer, Strokestown.

Appendix C.

Mr. Coghlan, civil engineer, gives in the following paper similar information as to the Headford district, county Leitrim :—

"River Drainage.

"Memoranda respecting Headford District.

"The land formerly flooded on the townland of Drumsna, and never before tilled, was let last year as conacre for potatoes, and is again this year. The charge last year was 6 *l.* per acre, the proprietor (Mrs. Walsh) supplying manure. This year it is 5 *l.*, with manure supplied, and 4 *l.* without.

"Patrick Beirne told me that he got ten barrels of potatoes from one rood (Irish) of this land. For any of those that he sold, he got 3 *s.* per cwt.

"In Gortcolligan, Mr. Pierce Simpson let the land last year as conacre (potatoes), supplying a small quantity of manure, at 6 *l.* per acre. He is putting down turnips in it this year himself.

"At the Award Meeting of this district, a letter from Mr. Simpson to Mr. Rowley (the proprietor of this townland) was read, stating that no benefit was conferred on the lands of Gortcolligan by the drainage beyond the baring (by the lowering of Lough Adaff) of a small quantity of land, covered with sedge and stones.

"The land referred to as having been let as conacre last year was never tilled before.

"In Farguin (Lord Albemarle, proprietor), the lands formerly flooded and never tilled before are now let by a man named Doherty, as conacre, at 6 *l.* per acre, manured by the takers with the spoil from the excavation of the river-course."

"John Coghlan,
"Resident Engineer."

"Newton Works, 1 June 1852."

Mr. R. A. Gray, district engineer, furnishes the following report of facts in reference to the Boyne district, in King's County:

"Drainage:—District of the Boyne, King's County.

"Christopher Donohoe, of Derrycows, has grown three crops of oats on the flooded land; does not remember the exact details of the first cost or profit, but admits it paid him well.

"The second crop since 1851 cost him, for seed and cultivation, 2 *l.* per acre; rent and taxes, 15 *s.*: total, 2 *l.* 15 *s.* The produce was 14 barrels per acre; sold for 9 *s.* 8 *d.* per barrel: 6 *l.* 15 *s.* 4 *d.*, being a clear profit of 4 *l.* 0 *s.* 4 *d.*

"William Waldron, same townland, sowed rape in 1851; ploughed the ground three times, at a cost of 1 *l.* 15 *s.*; burning, 15 *s.*; seed and hay seed sown together, 1 *l.* 4 *s.* 10 *d.*; rent and taxes, 8 *s.*: total, 4 *l.* 2 *s.* 10 *d.* The crop was used for feeding cattle, and Waldron calculated it as just worth the cost; leaves him the land now well laid down, and superior meadow, estimated to produce four tons to the acre.

"Edward Kelly, same lands, in 1848, sowed wheat, the seed and cultivation of which cost 2 *l.* 9 *s.*; rent and taxes, 17 *s.* 6 *d.*: total cost, 3 *l.* 6 *s.* 6 *d.*, produced 9 barrels per acre, and was sold for 16 *s.* 5 *d.*, or 7 *l.* 7 *s.* 9 *d.*, and straw, valued at 10 *s.*, leaving a profit of 4 *l.* 11 *s.* 3 *d.* He had potatoes and oats off the same land previously, but I could not learn what the two crops paid. The land is now laid down in meadow, and is worth, at the lowest valuation, 3 *l.*, exclusive of after-grass.

"In the neighbourhood of Edenderry the pasture now made available by the drainage is let at the rate of 2 *l.* 10 *s.* per head for the six months' grass; this is the established price, and feeds a beast per acre.

"On the lands of Kiltride Pass, Mr. Darby Cole, to whose management I alluded in my report for 1850, and is quoted in the Commissioners' 19th Report, page 119, treated his land in the same manner, and the following are the results:—1848: grew rape; produce sold for, per acre, 15 *l.* 12 *s.*; cost of growing, 2 *l.*; profit, 3 *l.* 12 *s.* 1849: grew rye; produce sold for, per acre, 5 *l.* 12 *s.*; cost of growing, 2 *l.*; profit, 3 *l.* 12 *s.* 1850: grew oats, produce sold for, per acre, 4 *l.* 10 *s.*; cost of growing, 1 *l.* 10 *s.*; profit, 3 *l.* 1851: in meadow; produce sold for, per acre, 4 *l.* 10 *s.*; cost of growing, 0 *l.*; profit, 4 *l.* 10 *s.* 1852: in meadow again, without top dressing, total profit, 24 *l.* 14 *s.*

"The total profit for four years was 24 *l.* 14 *s.*, from which deduct four years' rent and taxes, at 1 *l.* 5 *s.* per annum, amounting to 5 *l.*, shows a clear profit of 19 *l.* 14 *s.* to pay for the drainage.

"Richard A. Gray, District Engineer,
10 June 1852."

Appendix C.

In reference to the eastern parts of Ireland, Mr. Manning, district engineer, furnishes the following report as to the results in the Ardee, Fane, Glyde and Nobber districts, counties Louth and Meath.

"Drainage Commission, Castle Bellingham,
31 May 1852.

"River Drainage:—Louth Districts.

"Sir,

"In compliance with the request contained in your letter of the 11th instant, I beg to lay before you the following report on the benefits derived from the drainage of the districts under my charge.

Fane District.

"A very full report of agricultural improvement of this district is contained in my annual report for the year 1850. (*See* Appendix, 19th Annual Report, page 132.) At that period, 267 acres of land had been brought into cultivation, the profit on which, at 3 *l.* per acre per annum, amounted to 1,707 *l.* Since that period, a further quantity of 35 acres has been tilled, so that the gross profit at the above rate would amount to 3,384 *l.*, including the present crop. I do not think this is an over-estimate of the value of those crops, and certainly the lands in the district which I had an opportunity of examining recently, form a great contrast with their original state, as described in the 5th page of the preliminary report.

"I annex a copy of a letter which I received from Mr. Coddrington, agent to Lord Clermont, stating that, among other allowances, one tenant alone had been allowed 600 *l.* for injury done by floods on his farm.

Glyde District.

"A statement of the improvement effected in this district appears in the Appendix to the 19th Annual Report, page 135; and I annex hereto a letter received from one of the proprietors upon which that statement was founded.

"During the last year, I took the opportunity of a portion of my works being suspended for a short time to employ one of my assistants in ascertaining the quantity of land which had been brought into cultivation from the source of the river to the mills of Louth. They are as follow:

	A.	R.	P.
Oats	277	3	25
Potatoes	147	1	0
Rye	8	1	20
Flax	6	3	29
Turnips	16	2	35
Mangolds	11	0	6
Barley	1	2	39
Wheat	16	2	0
Cabbage	0	3	0
Carrots	4	0	20
	491	1	14

Valuing the actual profit on those crops at 3 *l.* per acre, the amount for one year would be 1,473 *l.*, a sum which would pay the annual instalment upon the whole district, containing 6,887 acres.

"As an instance of the great value of the improvement in this district, I may remind you, that on the 10th June 1851, you visited the lands of Lisrunny, which were formerly flooded by every fall of rain, and you will recollect that a considerable portion of this now valuable tract of land was under crop, and that a person who was setting potatoes in conacre informed us that the price paid was 8 *l.* per Irish acre (5 *l.* per statute acre), without any manure, which indeed was not required. I have been informed that the whole of those flat lands of Lisrunny have been let at 4 *l.* per Irish, or say 2 *l.* 10 *s.* per statute acre.

I remember this. W. T. M.

Ardee District.

"Some of the facts respecting the improvement of this district appear in the correspondence published by order of the House of Commons. Further information was forwarded to you on the 14th of February last; and I now beg leave to annex to this report,

"First. A letter and notice of Mr. George M'Adams, by which it appears that he valued five acres of crops grown on the low lands (originally sallow beds), at 100 *l.* at the least.

'Second. Printed notice and memorandum, stating that the lands of Moneystown, Keamstown, &c. are now to be let for grazing for six months, at from 2 *l.* 15 *s.* to 3 *l.* per head. Those lands, although of prime quality, were never available for more than three months at the very most, and often not for so many weeks, and were let at 6 *d.* per head per week, or say 6 *s.* 6 *d.* for the season.

"When those lands are now set by the acre at 40 *s.*, or say 25 *s.* per statute acre, and meadows at 38 *s.* per statute acre.

"I examined those lands during the last autumn; the average quantity of seed oats set to the

the Irish acre was eight stone, and varied from six to ten stone; it is very common to set 20 stone per acre, and thus a saving in seed alone is effected of, say, 6 *s.* 6 *d.* per statute acre. The crops are generally too thick.

NOBBER DISTRICT.

"The lands in this district are very suitable for grass, and the greater part of the district has not been broken up. In the year 1851, Mr. Smith, of Cregg, set 11 Irish acres in conacre (without manure), at 7 *l.* per acre (87 *s.* per statute acre), being the first crop after drainage.

"Portions of Nobber bog, which could not be walked through previous to drainage, have been set, in the year 1851, for 3 *l.* per statute acre; and part of the lands of Muff have been also let at 87 *s.* per acre.

"I have been informed that some of the lands set with potatoes have produced from 100 to 120 barrels per Irish acre, which is equivalent to 60 to 75 barrels per statute acre, or eight to ten tons per statute acre.

"From my anxiety to state nothing which appeared doubtful, and from the difficulty of obtaining accurate information, this Report is necessarily more brief than I could desire.

"I am, &c.

(signed) "ROB. MANNING,
"Dist. Engineer."

"To William T. Mulvany, Esq.,
Commissioner of Public Works, Dublin."

Facts and information of a similar nature have been from time to time reported in the Board's Annual Reports, as, without citing all the cases, may be seen in the year 1846, Fourth Annual Report for Drainage, page 10; in 1849, in the Seventeenth Annual Report of the Board of Public Works, pages 227, 238 and 252; in 1850, in the Eighteenth Report, pages 46, 155, 172; and in 1851, in the Nineteenth Report, pages 56, 59, 60, 61, 62, 96, 103, 107, 111, 119, 135 and 141.

I have myself seen many of the cases herein referred to, and several others in different districts, which confirm me in the opinion that where adequate means are used to render available the benefits afforded, the lands will soon, by their increased value, afford advantages much more than commensurate with the cost of the works, and the cost of subsequent measures of cultivation.

In two cases of embankment of lands from the sea, where the expense has been greatly increased by the partial destruction of the works by storm; and in one or two very small districts, in mountainous countries, where there exists an abundance of waste lands, the margin between the limit of advantage and cost is much more closely confined; but even in these instances, we believe, that by the use of proper means, and the allowance of sufficient time for the repayment of the instalments, the lands reclaimed will repay the expenditure, whilst the works have fully accomplished one of the proposed objects of relief by employment.

The benefits of a general or public nature which have resulted from the drainage measures are evidenced already, in many parts of the country, by partial improvements in the climate, and the diminution of fever and diseases incidental to the vicinity of flooded or wet and swampy low lands.

5. *The final Awards and Repayments, with the Security for Money advanced.*

The great tests of the operation of the law are the results developed in the final awards and the repayments of the expenditure. These are exhibited in pages 452 to 456 inclusive of the General Correspondence on Arterial Drainage, laid before Parliament during this Session.

It will be seen that 52,800 acres of land have been drained or improved in 71 districts, by an expenditure amounting to 213,310 *l.* 10 *s.* 4 *d.* chargeable on the lands, or an average cost of 4 *l.* 0 *s.* 9½ *d.* per acre. It will also be seen that although the awards were only begun to be made in March 1849, and the expenditure is to be repaid by instalments, extending over long periods from 12 to 40 years, already 35,049 *l.* 3 *s.* 11 *d.* has been repaid in the cases for which awards have been made, and 15,936 *l.* 18 *s.* 2 *d.* for county bridges, in other cases, amounting in the whole to 50,986 *l.* 2 *s.* 1 *d.*; and we know that the repayments generally in this service have, notwithstanding the difficulties of the times, progressed satisfactorily.

In addition to the foregoing, the works are nearly finished in 20 districts now nearly ready for award, containing 48,762 acres drained or improved, by an expenditure amounting to 241,569 *l.*, chargeable on the lands, or an average cost of 4 *l.* 19 *s.* per acre, though inclusive of some of the most expensive cases of the embankment of land from the sea.

These results have been obtained, notwithstanding the difficulties created by the famine; and whatever may be the depreciating effects of the late distress, or the continued feeling of alarm which prevents, to a great extent, the full appreciation of the benefits of these measures, little doubt does exist in the minds of practical men who have seen the districts, and witnessed the results where the parties availed themselves of the improvement, that with returning prosperity and industry, the full value of the measure will be admitted, and justice done to the labours and anxiety of the administrative body.

ABSTRACT. Part No. 1. - - - - - - - -

STATEMENTS of Expenditure and - - - - - - -

	TOTAL EXPENDITURE for all Purposes up to 31st Dec. 1851.	Deduct from Total Expenditure						TOTAL ACTUAL COST of WORKS and SUPERINTENDENCE.	Divide Total	
		Interest.	Preliminary Expenses.	Compensation and Purchase of Property.	Law Expenses.	Advertisements, Valuation and other Matters in no way connected with the execution of Works.	TOTAL.		Length of Main Channels and Main Drains to remain open.	Average Cost per Mile.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	Miles.	£. s. d.
72 Districts in which awards have been made, containing 54,783 acres of land drained or improved, the average cost of the drainage of which is 4 *l.* 0 *s.* 9 *d.* per acre	233,680 3 3	24,072 8 –	3,813 2 –	4,240 12 3	321 14 2	2,963 17 7	35,411 14 –	198,268 9 3	539¾	367 6 8
49 Districts, in which awards have not yet been made	1,219,657 5 10	110,334 10 6	15,401 12 –	32,805 11 –	687 13 10	4,716 15 8	163,946 3 –	1,055,711 2 10	1,216	868 3 8
121 TOTAL - - -	1,453,337 9 1	134,406 18 6	19,214 14 –	37,046 3 3	1,009 8 –	7,680 13 3	199,357 17 –	1,253,979 12 1	1,755¾	Average 714 4 –

ABSTRACT. Part No. 2. - - - - - - - -

Showing Cost of Earth and Rock Work, as above, charging thereto all Expenditure,

	TOTAL EXPENDITURE for all Purposes up to 31st Dec. 1851.	Deduct Cost of Masonry, Wood and Iron in Bridges, &c., as in Column marked thus *.	TOTAL COST of EARTH and ROCK WORK, inclusive of Deductions, as above, for Interest, Preliminary Expenses, Compensation, Law Expenses, Advertisements, Valuations, &c.
	£. s. d.	£. s. d.	£. s. d.
72 Districts in which awards have been made -	233,680 3 3	28,706 10 10	204,973 12 5
49 Districts in which awards have not yet been made	1,219,657 5 10	198,121 10 11	1,021,535 14 11
121 TOTAL - - -	1,453,337 9 1	226,828 1 9	1,226,509 7 4

- - - - - - - - ABSTRACT. PART No. 1.

- - - - - - - - ACTUAL COST of WORKS in 121 Districts.

Actual Cost of Works, &c. by			Deduct from Total Actual Cost of Works, &c. Cost of							TOTAL COST of EARTH and ROCK WORK, inclusive of Plant, Tools, Materials, Engineering Superintendence and unwatering the Works.	TOTAL QUANTITY of EARTH and ROCK WORK measured.	Average Price per Cubic Yard.
Add, Top Drains, opened for unwatering, then closed again, or left open.	Total Number of Miles.	Average Cost per Mile.	Masonry, Sluices and Machinery in Weirs, Mills, Locks, &c.	Masonry in Accommodation Bridges.	Masonry in County Bridges.	Wooden or Iron Bridges.	Plant, &c. &c. remaining on Works, Drains made by the Perch, and not measured, and some unwatering.	Proportion of Superintendence on foregoing.	* TOTAL.			
Miles.	*Miles.*	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	*Cubic Yards.*	*d.*
171¾	711½	278 13 3	8,269 7 1	1,623 16 -	12,676 6 7	244 14 1	3,455 - 2	2,437 6 11	28,706 10 10	169,561 18 5	7,609,581	5½
574	1,790	589 15 8	86,404 18 11	15,724 16 1	55,252 9 10	4,057 3 3	20,691 14 10	15,990 8 -	198,121 10 11	857,589 11 11	27,907,166	7½
745¾	2,501½	Average 501 6 -	94,674 6 -	17,348 12 1	67,928 16 5	4,301 17 4	24,146 15 -	18,427 14 11	226,828 1 9	1,027,151 10 4	35,516,747	Average 6¾

- - - - - - - - ABSTRACT. PART No. 2.

except Masonry, Wood and Iron in Bridges, &c., as in Column marked thus *.

TOTAL QUANTITY of EARTH and ROCK WORK measured.	Average Price per Cubic Yard.	
Cubic Yards.	*d.*	
7,609,581	6½	- - Measured Earth and Rock excavation, including Interest on the whole Expenditure, Preliminary Expenses, Compensation, Purchase of Property, Law Expenses, Advertisements and Incidental Expenses, Plant and Tools, Superintendence:—does not include in the quantity (though it includes the cost) of much of the unwatering, the maintenance, temporary works and works done by the day.
27,907,166	8	
35,516,747	8¼	

Appendix D.

Circulars, arranged in order of Dates.

(Circular.)

Sent to all Engineers in charge of Drainage Works.

13 November 1845.

Sir,

I am to acquaint you that the Board will require a monthly report of progress of all works and operations carrying on under the Drainage Act. This report to be laid on the Board's table on the 5th of each month, and on the 6th, if the 5th falls on a Sunday.

You will please to attend to this order, so far as you are concerned.

I am, &c.
(signed) Henry Paine, Secretary.

(Circular.)

Office of Public Works, 7 April 1846.

Sir,

I am directed by the Commissioners of Drainage to direct that a weekly return of the actual number of men daily employed on each work in your charge be forwarded from your station, so as to be received at this office every Monday morning. Your most particular attention is required to this order. A supply of Forms is sent herewith, and more will be sent when required.

By Order,
(signed) J. C. Walker, Secretary.

Drainage, Navigation, and Water Power, Acts 5 & 6 Vict., c. 89; 8 & 9 Vict., c. 69; and 9 Vict., c. 4.

Memoranda as to the Course of Proceeding, and some of the principal Provisions of these Acts, as regards Drainage alone.

9 Vict., c. 4, ss. 8, 9, 10, 11, 12, 13, 15 and 16.

The General Drainage Acts having been much amended by the Act of the present Session, whereby the delay and expense of preliminary proceedings have been considerably reduced, but the provisions for this purpose being to a great extent dependent for their construction upon the existing provisions in the former Acts, the following brief memoranda have been prepared for the information of parties desirous of availing themselves of the benefit of the Acts, and to facilitate reference.

As regards drainage alone, the course of proceeding by the amended Act for the present and ensuing year may be considered as twofold,—namely, by the Provisions for the Ordinary Proceeding under the Acts, or by the "Provisions for Summary Proceedings," a complete copy of which last-mentioned provisions is annexed. (*See* Appendix, No. 1.)

The "Provisions for Summary Proceedings" are calculated to meet the anticipated exigencies of the present and ensuing season, by enabling employment to be quickly afforded in the execution of works of drainage. To carry out this object fully, however, it is desirable that applications under those provisions be confined to measures of a simple class, in which many conflicting interests are not involved, and consequently the necessary works can be quickly determined upon and commenced.

9 Vict., c. 4, ss. 37, 38, 39 and 40.

The Acts, as amended, are made applicable to the drainage of the lands of one proprietor, as well as those of several proprietors, and are available for the drainage of bog, waste or moor land, or the embankment of land from the sea or tide-way, as well as to the drainage of cultivated, arable or pasture land, or lands liable to floods.

Preliminary Proceedings.

5 & 6 Vict., c. 89, s. 3. 9 Vict., c. 4, s. 46.

Proprietors or any persons interested "in any lands liable to be flooded or injured by water, or capable of being drained, or the drainage whereof may be capable of being improved," may apply by memorial to the Commissioners of drainage, praying that the same may be drained, or the drainage thereof improved.

Though the Acts give one proprietor or person interested the power of applying by memorial, yet it is desirable that as many proprietors as concur in placing the district under the operation of the Act, and whose signatures can conveniently be obtained, should join in the memorial.

9 Vict., c. 4, s. 9.

The Grand Jury of any county is empowered to make a presentment directing the secretary to apply by memorial to the Commissioners for any drainage, and to present for a sum of money to defray preliminary expenses, which the treasurer is authorized to deposit out of any monies in hands.

The memorial binds the parties only to the expense of the preliminaries.

The

The forms of memorial to be used for ordinary proceedings or for summary proceedings are different: *see* Appendices, Nos. 2 and 3.

These forms can be obtained by applying to the Secretary of the Commissioners at the Office of Public Works, Dublin.

Under the Ordinary Proceedings.

A deposit of money (to be fixed by the Commissioners) to defray the expenses of surveys, report, valuation, &c. is required—which sum is repaid to the depositors in the event of the works being proceeded with; if the work be not assented to or proceeded with, any excess in the deposit is returned, and any deficiency must be made good by memorialists. 5 & 6 Vict., c. 8, ss. 6, 7 and 8.

Under the Summary Proceedings.

To save time, no advance of money for the preliminaries is required, the memorialists undertaking by the memorial to defray the expense in the event of the works not being proceeded with. 9 Vict., c. 4, ss. 46 and 51. 5 & 6 Vict., c. 89, s. 39.

Under the Ordinary Proceedings.

An engineering survey in detail is carefully made, and the cost of the works and all expenses accurately estimated; a general territorial survey and valuation, showing the average present value, and the increase in the value, are prepared, with lists of proprietors, &c.; such maps, plans and schedules as are deemed requisite are then deposited for three weeks in some place in or near the district for public inspection, of which due notice is published. 9 Vict., c. 4, s. 8.

At the expiration of which time a public meeting is held by the Commissioners, or one of them, pursuant to notice, to hear objections, finally decide on the measure to be adopted, sign the plans, &c., and receive the assents of proprietors, after which the declaration and final notice hereinafter mentioned are issued, and other preliminary formalities completed. 5 & 6 Vict., c. 89, ss. 12, 13, 16, 17, &c.

Under the Summary Proceedings.

A cursory examination of the district, with a report and estimate of the works, and a list of the proprietors, are prepared, and if the Commissioners are of opinion that the benefit will be commensurate with the expense, the report is lodged in the district for public inspection for two weeks, and if the requisite amount of assents are given before the expiration or within three weeks from the date of lodgment, the Commissioners issue their final notice without holding any meeting, or making such declaration as before mentioned. 9 Vict., c. 4, s. 47. s. 48.

Upon sufficient cause shown, the Commissioners are empowered to extend the time for receiving the assents of proprietors for two weeks beyond the expiration of the three weeks last mentioned. 9 Vict., c. 4, s. 48.

If the assents of the proprietors be not given within the time specified, the work cannot be proceeded with under the summary or any other proceedings without the measure being again taken up, and all the required preliminaries again complied with, after the expense of those previously undertaken shall have been defrayed by the memorialists.

Definition of Persons deemed Proprietors of Lands to be drained or improved, under the Drainage Acts, Ireland. 5 & 6 Vict., c. 89, ss. 23, 24, 25 and 26.

Persons seised of, or entitled in possession, as tenant in fee-simple, or in fee-tail, general or special; or as tenant by courtesy.

Persons entitled under any will or settlement, deed or instrument, (except a grant, lease, or agreement in writing for such grant or lease, reserving rent,) for his own life, or that of any other persons; or for years determinable on such lives.

Persons entitled under leases granted by a bishop, collegiate or ecclesiastical body; or any person having immediate or derivative title from or under same, which lease shall contain a *toties quoties* covenant of renewal.

Persons entitled under any grant or lease for an estate in fee; or for a term of years absolute, whereof forty or more years are unexpired; or for any life or lives renewable for ever; or for any term of years renewable for ever; whether such last-mentioned persons shall be entitled absolutely, or as tenant in tail, or as *quasi* tenant in tail, or for his life.

Persons who are feoffees, or trustees of such land, or any such estate or interest therein as aforesaid, for charitable or other purposes.

Persons who are guardians of infants; husbands of feme coverts; committees of estates of idiots or lunatics, subject to conditions of 25th section, which requires such last-mentioned persons to obtain the sanction of the Court of Chancery (to be obtained in a summary way on petition), before acting as proprietors, for the purpose of assenting. 5 & 6 Vict., c. 89, s. 25.

Persons who are joint tenants, tenants in common or co-partners, to be accounted as one person, but the concurrence of the person or persons possessing two-thirds of the estate or interest of the lands to be drained deemed sufficient for giving assent in respect thereof. s. 26.

In cases of estates vested in persons by way of mortgage, or as security for money, the person who would be proprietor, if no such estate by way of mortgage or security had been created, is still to be deemed the proprietor.

Appendix D.

In cases where several persons shall have in any portion of land such of the aforesaid estates or interests as would entitle them to be deemed proprietors, such of them shall be deemed proprietors for the purposes of these Acts as shall be in actual occupation of the land, or shall have such estate or interest next in reversion or remainder to the estate or interest of the person in actual occupation.

Definition of persons who, having in Lands to be drained a less permanent interest than above stated, may, nevertheless, qualify to become Proprietors, either for the purposes of assenting or becoming exempt from having their Rent raised by paying or securing the amount chargeable on their Lands.

(24th section of Act 5 & 6 Vict. c. 89, amended by 13th section of Act 9 Vict. c. 4.)

Persons seised of or in possession for any life or lives; or for any term of years determinable on any life or lives; or for any term of years absolute, whereof seven years or more shall be unexpired—who shall either deposit the sum of money which the Commissioners shall estimate as the amount to which their portions of land will be liable; or who shall, in addition to such portions of land, give such security as the Commissioners shall deem sufficient in lieu of such deposit. Such deposit is to be made, or security given, at any time before the period limited by the Commissioners for the receiving of the assents for the district.

Persons qualifying under these provisions to be deemed proprietors for all the purposes of the Act, and their lands liable as those of any other proprietors for future costs and maintenance of works. Such persons not to be liable to have their rent raised under the provisions of the Act.

Where several persons shall have such interest in such lands, preference shall be given to the person in actual occupation, and in case such person shall not desire to make such deposit, or give such security, then preference shall be given to the person having such estate or interest next above the occupier, and so on.

As to Assents.

9 Vict., c. 4, s. 11.

The assent, in writing, to the execution of the proposed works of the "proprietors" for more than half the extent (that is, for more than half the number of acres) of the land to be drained or improved by drainage in any district, as defined by the Commissioners, is binding upon the whole.

9 Vict., c. 4, s. 12.

In cases where one proprietor shall hold the half or more, but less than two-thirds of the extent of land to be drained or improved, and shall neglect or refuse to assent, and the proprietor or proprietors of the residue shall assent, with the concurrence of the tenants (if any), having leases whose concurrence is required, as hereinafter mentioned, then the works may be commenced if the Commissioners shall be satisfied that the increased value to arise will yield 10 per cent. per annum profit on the estimated cost of the works, and all expenses incidental thereto.

5 & 6 Vict., c. 89, s. 27.

In cases where any portion of land (in respect of which any assent, as aforesaid, shall be given) shall be in the actual occupation of any person, under any grant, lease or agreement in writing for a lease, for a life or lives, or for a term of years whereof more than fourteen are unexpired.

The consent of such person is required to give validity to the assent of the "proprietor" in respect of the lands comprised in such grant, lease or agreement.

The assents and consents for the purposes of these Acts may be given by the known agents or attorneys of the parties "duly authorized for all or any of such purposes."

For summary proceedings the known agents may assent, without being duly authorized for all or any of such purposes: *see* sec. 48, page 223.

The requisite assents and consents must be given after the plans have been signed by the Commissioners in the case of ordinary proceedings, or after the report has been lodged for inspection in the case of summary proceedings, and within the time which the Commissioners are authorized to limit and appoint, otherwise the works cannot be proceeded with until all the preliminary proceedings shall have been again taken.

The neglect or refusal to assent amounts to a positive dissent.

Annexed are the forms of assents for the ordinary and summary proceedings under these Acts, copies of which will be furnished when required. Appendices, Nos. 4 and 5.

Termination of Preliminary Proceedings

After the requisite amount of assents have been duly furnished—

In the case of Ordinary Proceedings.

5 & 6 Vict., c. 89, ss. 33, 34, 35 and 36. Amended by 8 & 9 Vict., c. 69, s. 7; and further amended by 9 Vict., c. 4, ss. 14 and 15.

The Commissioners make and publish a "declaration," to which there is an appeal to the assistant barrister, as regards the question of whether the full amount of assents have been given; or, as regards mills and factories, provided notice of appeal be given to the Commissioners within three weeks after publication of declaration.

After the lapse of three weeks, if there be no notice of appeal given, or, after the trial of such appeal, if any (unless in the case of mills and factories, which shall not stay the execution

execution of the works, except as regards works at such mill or factory), the Commissioners are empowered to issue a "final notice," stating that all the requisitions of the Act have been complied with, which notice is conclusive of all proceedings required previous thereto.

In the case of Summary Proceedings.

The Commissioners are empowered, as before mentioned, to publish the "final notice," as soon as they receive the requisite amount of assents. 9 Vict., c. 4, s. 48.

Works.

After the publication of the "final notice," the Commissioners may bring the Act fully into operation, and if they so think fit, may borrow money, and proceed with the execution of the requisite works.

The works are to be undertaken by the Commissioners, either by their own agents, or contract, as they shall think fit, for the benefit, and consequently at the risk of the parties whose lands are to be drained or improved.

In cases where all the proprietors and tenants are unanimous, and no navigation or mill is to be affected, the proprietors may execute the works on certain conditions, at their own expense, and the Commissioners are to make an award apportioning same. 9 Vict., c. 4, s. 43.

Security for Money and Repayment.

The Commissioners are empowered to borrow for the purposes of any works to be commenced, and for which the declarations were made after the 1st of January 1846, any monies which may be requisite, from any person willing to lend the same, or from the Public Loan Commissioners, or the Commissioners of Public Works, at a rate of interest not exceeding 5 per cent. per annum, upon debentures which they are empowered to issue for any amounts they think fit; which debentures are transferable by simple endorsement. *See* Form of Debenture, Appendix, No. 6. 9 Vict., c. 4, s. 6. 8 & 9 Vict., c. 69, s. 9

These debentures will be issued for sums of 50*l.* and upwards, and the Commissioners offer a preference to the proprietors and farmers in the district, who may become lenders, without any reference to their liabilities in connexion with the drainage.

The interest is payable half-yearly from the date of the debenture on each 1st day of January and 1st day of July. 9 Vict., c. 4, s. 6.

The debentures for each district will not become payable until after the termination of a period to be fixed therein, varying from two to three or more years after their date, such time being computed generally according to the time which it is anticipated will be required to complete the works, and all proceedings connected therewith. After the expiration of said time, each debenture will be paid off in one sum in the order of the numbers of the debentures for each district; two months' notice being given in the Dublin Gazette and other newspapers before payment; after the expiration of which time all interest secured by such debenture shall cease. 9 Vict., c. 4, s. 7.

Upon the completion of the works the Commissioners make their final award, specifying the total amount expended, with interest on borrowed monies and all other incidental expenses, and the amount charged upon each portion of land. 5 & 6 Vict., c. 89, s. 106. 9 Vict., c. 4, s. 14.

The monies borrowed on debentures, with the interest thereon, are charged upon the monies to accrue to the Commissioners under their final award in each case; and the monies specified to be repayable under their award are charged with interest upon the lands to be drained or improved, from the date of the declaration or final notice (made and published previous to the borrowing of the money and date of debenture), with priority and in preference to all charges and incumbrances on said lands (except quit-rent and rent-charge in lieu of tithe); and are also charged upon so much of all other lands within one mile of the lands so to be drained or improved as belong to the same proprietors, and as the Commissioners shall limit and appoint, having regard to the sufficiency of the security, but without priority to previous charges and incumbrances as regards such other lands. 9 Vict., c. 4, s. 6. s. 1. A first charge on the lands drained.

The Commissioners are required in making their final award so to arrange the repayment from the lands that, whether it be by one sum or instalments, the amount of that one sum or each instalment with interest shall not exceed the estimated increase in the value of the land as stated by them in their award for the time allowed for the repayment of that one sum, or, the time allowed for the repayment of each such instalment; thus, whilst full security is given to the lender or capitalist, the repayment is made easy to the parties for whose benefit the works are undertaken. 9 Vict., c. 4, s. 1.

The Commissioners are empowered to recover the monies and pay the debenture holders.

The Commissioners are empowered to divide the repayment by the proprietors of lands of principal and interest into equal instalments, payable half-yearly or otherwise, in fact, as a terminable annuity. 9 Vict., c. 4, s. 2.

Any proprietor is empowered, after the first award has been made, upon giving twelve months' notice to the Commissioners, to pay off the whole amount chargeable, or then due upon his lands. 9 Vict., c. 4, s. 3.

Proprietors who pay, to the credit of the Commissioners, into the Bank of Ireland, or any other bank named by them, within 31 days after the date fixed for repayment, the sums of principal and interest due by them, will not be liable to pay receiver's fees; but parties neglecting will have to pay in addition 1*s.* in the pound receiver's fees. s. 4.

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5 & 6 Vict., c. 89, s. 111.

In case of neglect or non-payment by proprietors for three months, any person authorized by the Commissioners is empowered to enter and receive the rents, profits and issues of the lands, together with all costs and expenses attending such entry and collection; and the Commissioners may apply, at the expense of defaulting parties, to Court of Chancery or Exchequer to appoint a receiver; or the Commissioners, if they so think fit, may raise such sum and interest by mortgage of such lands, or a competent portion thereof.

9 Vict., c. 4, s. 5.

In cases of default in paying sums not exceeding 50 *l.*, Commissioners may recover same by civil bill.

ss. 38, 39, 40.

In addition to the above means of recovery, in cases of the drainage of bog, waste or moor land, or land embanked from the sea, if default be made in the repayment for six months, the Commissioners may lease under a fine for 99 years, an adequate portion of the lands to pay the money due; or in default for 12 months, may sell, absolutely, an adequate quantity to repay such money.

5 & 6 Vict., c. 89, s. 113.

Tenant-occupiers, not being proprietors, paying monies on account of their landlords, may deduct the amount from the rent payable by them.

5 & 6 Vict., c. 89, s. 115.

Proprietors of less than fee-simple may charge, with the consent of the Commissioners, the expenses on the lands to which entitled, but so that 1-20th part of such charge, with interest, be paid off in each year.

s. 16.

Proprietors, being tenants in tail or for life, may lease the lands drained or improved for 31 years, provided they reserve the best improved rent, without fine or foregift.

s. 117.

If the lands of any proprietor be held or occupied under him, by virtue of any lease, agreement or contract for a lease, the Commissioners shall determine the amount of increased rent to be paid to such proprietor, either directly or through intermediate tenants (if any), having regard to all the circumstances of the case; and the Commissioners' decision shall be endorsed on the lease or instrument; such increased rent shall be payable and recoverable in like manner and with like remedies as the original rent.

Maintenance of the Works of Drainage.

5 & 6 Vict., c. 89, ss. 120 and 121.

In cases of drainage, in which no navigation shall have been improved or formed, or reservoir made in conjunction with the drainage, the proprietors of the lands are to elect trustees, who are to remain in office for three years, and until a new election; and such trustees are to have all the powers of the Acts for the maintenance and preservation of the works, and are empowered to levy an annual rate proportionably upon the lands drained and improved, for defraying the expense of such maintenance and conservancy; with a view to the future facilities and benefit to the country of such a system of conservancy, both as regards drainage and fisheries, the importance of having, if possible, the whole river in one district will be evident.

Dublin, 11 April 1846.

(Appendix, No. 1.)

Extracts from Drainage Act.

Provisions for Summary Proceedings, under 9 Vict., c. 4, intituled, An Act to amend the Acts for promoting the Drainage of Lands, and Improvement of Navigation and Water Power in connexion with such Drainage in Ireland, and to afford facilities for increased Employment for the Labouring Classes in Works of Drainage during the present Year.—Passed 5 March 1846.

Provisions for Summary Proceedings.

No works shall be undertaken under following provisions, unless assents be obtained before 1st August 1847.

XLV. "And whereas by reason of the failure or destruction of a portion of the potato crop of the last season in Ireland, there is reason to apprehend that in certain districts great distress may, during the ensuing spring and summer, prevail among the labouring classes of the population; and it is expedient, with a view to alleviate such distress, by provisions of a more summary nature than hereinbefore contained, to give, for part of the present year, increased facilities and powers for commencing without delay, and carrying on various works of utility connected with the drainage and improvement of lands in such districts, whereby remunerative employment may be afforded to the labouring classes;" be it therefore enacted and declared, that the provisions hereinafter contained shall be called and deemed to be "Provisions for Summary Proceedings" under this Act, and that no work shall be undertaken or commenced under such provisions for summary proceedings as to the execution of which work the assents of the proprietors of lands, as required by the provisions of this Act hereinbefore contained, shall not have been given or obtained before the First day of August in the year One thousand eight hundred and Forty-seven.

Any proprietors of lands may apply to the Commissioners to have such lands drained or improved under this Act.

XLVI. And be it enacted, That for the purpose of such summary proceedings, it shall be lawful for any proprietor or proprietors of any land, or part of any land liable to be flooded or injured by water, or capable of being drained, or the drainage whereof may be capable of being improved, to apply by memorial to the said Commissioners, stating the nature and extent

extent of such land, and praying that the same may be drained, or the drainage thereof may be improved under the provisions of this Act, and by such memorial undertaking to pay to the said Commissioners the costs and expenses of the preliminary inquiries, under the provisions for summary proceedings under this Act, as to the works for such drainage or improvement, in the event of such works not being proceeded with by the said Commissioners.

The Commissioners may cause a preliminary investigation to be made in a summary way, and obtain a report.

XLVII. And be it enacted, That for the purpose of such summary proceedings, when any such memorial as last aforesaid shall be presented, or any memorial for any such purposes under the said first-recited Act shall, before the passing of this Act, have been presented to the said Commissioners, it shall be lawful for the said Commissioners to cause such preliminary examination and inquiry as they shall think fit to be made by some engineer, surveyor or other competent person, or to examine and adopt any survey or report which shall have been made, and cause to be ascertained in a summary way the extent of the lands to be drained or improved, the probable cost and expense of such drainage or improvement, and the probable benefit to result therefrom, together with the names of the reputed proprietors of the lands to be so drained or improved; and if upon any such report it shall appear to the satisfaction of the said Commissioners that the benefit to result from such works would be commensurate with the amount of the estimated cost of the works, and incidental expenses connected therewith, they shall cause a copy or copies of such report, with their opinion thereon, to be lodged at some place in or near such lands for public inspection for the space of Two weeks, and cause notice thereof, and of the place or places at which such copy or copies of such report shall have been lodged, to be given in any newspaper circulating in the county or place in which such lands shall be situate, and to be posted on the usual places for posting grand jury notices in or near the said lands, and otherwise as they shall think fit.

A copy of the report of their opinion thereon to be lodged for inspection, and notice thereof to be given.

Such notice shall require the proprietors of lands to be drained to furnish their assent or dissent.

XLVIII. And be it enacted, That in and by such notice as last aforesaid, all proprietors (as defined under the said first-recited Act) of such land so to be drained or improved, shall be called upon to furnish in writing, either by themselves or their known agents, to the said Commissioners, at their office in Dublin, or to some person by the said Commissioners authorized, their assent to or dissent from the proposed drainage or improvement on or before a day to be named in such notice, not less than Three weeks from the day on which such report shall have been lodged as aforesaid; and if before or at the expiration of the said period the said Commissioners shall ascertain that the assent in writing of the proprietors (as defined in the said first-recited Act, with the consent of the tenants, if any, as by the said Act required in that behalf) of more than one-half in extent of the lands so to be drained or improved shall have been given to the said proposed works, the said Commissioners, if they shall so think fit, shall cause to be published in the Dublin Gazette, and also in the manner herein as to such notice last aforesaid directed, a final notice, stating that all the preliminaries required by the provisions for summary proceedings under this Act have been complied with, which proceedings shall be binding and conclusive upon all parties and persons whomsoever; and proof of the publication of such final notice as aforesaid shall be sufficient evidence that such final notice was duly given, and that all the requisitions of this Act in relation thereto were complied with: Provided always, that in any case in which the said Commissioners shall be of opinion that such period of three weeks last aforesaid limited for furnishing the assents or dissents of parties as to any such works is, under the particular circumstances of such case, insufficient, it shall be lawful for the said Commissioners, if they shall so think fit, to extend such period for an additional period of Two weeks, so that such additional period shall not in any case extend beyond the First day of August in the year One thousand eight hundred and Forty-seven.

If the proprietors of more than half of the lands assent, a final notice may be given.

After such final notice, the powers and provisions of the Drainage Acts may be applied for the purposes of this Act.

XLIX. And be it enacted, That from and after the publication of any such last-mentioned final notice in manner aforesaid, the said Commissioners may, in case it shall seem to them expedient, commence and proceed with the works which they may consider necessary for the drainage, or improvement by drainage, of the lands or district to which such final notice shall relate; and all and every the powers, authorities and privileges vested in or given to the said Commissioners by the said recited Acts or this Act, and the several provisions in the said Acts or this Act contained, shall and may be used and exercised by the said Commissioners, and applied, as far as the same are or shall be respectively applicable, to and for the purposes of the provisions for summary proceedings under this Act, and to and for the borrowing and securing of money, the charging of lands, the execution of the works, the repayment and recovery of the costs and expenses thereof, the providing for, sustaining, upholding and maintaining the works, and all other proceedings whatsoever in relation thereto respectively, and to any other matter or thing authorized and empowered to be done under the provisions of the said recited Acts or this Act, and necessary in the opinion of the said Commissioners for carrying into full effect the purposes of this Act: Provided always, that nothing herein contained shall be construed to require the said Commissioners, for the purposes of the provisions for summary proceedings under this Act, to take any other proceedings, or do any other act previous to the issuing of any such last-mentioned final notice, than by the said provisions for summary proceedings under this Act are required: Provided also, that the period from which any such charge of money on lands shall take effect or have priority in respect of works undertaken under the provisions for summary proceedings under this Act shall be the period of the date of such last-mentioned final notice in respect of such lands,

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lands, and instead of the date of the declaration or the registry of the memorandum of such declaration as in this Act before provided in respect of lands to become chargeable.

No greater amount than at the rate of 3*l.* per acre to be expended under the provisions for summary proceedings under this Act.

L. Provided always, and be it enacted, That in the case of any works commenced, undertaken and carried on under the provisions for summary proceedings under this Act, no greater amount of money shall be expended on the said works than a total sum equal to an amount calculated at the average rate of Three pounds sterling for each and every statute acre of land so to be drained or improved by such works as aforesaid, until and unless all the assents which by this Act are hereinbefore required in relation to works carried on under the provisions of the said recited Acts or this Act shall have been again given or obtained to and for the further execution or final completion of the works necessary in the opinion of the said Commissioners for such drainage or improvement as aforesaid; but if at any time all such assents as last aforesaid shall have been again given or obtained, such works commenced, undertaken and carried on under the provisions for summary proceedings under this Act, may be further carried on, executed and completed, at such further costs and expense as shall be necessary in the opinion of the said Commissioners, as in other cases under the provisions of the said recited Acts or this Act.

The works may be afterwards carried on according to the general provisions of the Drainage Acts.

The Commissioners of the Treasury may make temporary advances to the Commissioners under this Act for the expenses of preliminary inquiries, &c., under the provisions for summary proceedings.

LI. And be it enacted, That it shall be lawful for the Commissioners of Her Majesty's Treasury, or any Three or more of them, to cause to be issued as a temporary advance from time to time during the present year, as they may find necessary, out of the growing produce of the Consolidated Fund of the United Kingdom of Great Britain and Ireland, any sum or sums of money not exceeding in the whole the sum of Ten thousand pounds, by way of imprest, to the said Commissioners for the execution of this Act, to be by them applied in providing for the expenses of procuring and prosecuting any such preliminary examinations or inquiries under the provisions for summary proceedings under this Act, and in procuring a sufficient supply of tools for executing any works to be carried on under the last-mentioned provisions; and in every such case in which any portion of such monies so advanced and issued shall be so applied by the said Commissioners, such sum of money so applied in respect of any such work shall be repaid to the Consolidated Fund by the said Commissioners, in such manner as the Commissioners of Her Majesty's Treasury may direct, from and out of any funds or monies to be borrowed or raised by them for defraying the costs, charges and expenses incurred or to be incurred in the execution of such work: Provided always, that in any case where the expenses of any such preliminary investigation and inquiry as last aforesaid as to the works for any proposed drainage or improvement shall have been defrayed out of the monies so advanced and issued as last aforesaid by the Commissioners of Her Majesty's Treasury, and the assents of the proprietors as to such works, as required by the provisions for summary proceedings under this Act, shall not have been obtained within the time limited by the said Commissioners for that purpose, the amount of such expenses shall be paid to the said Commissioners for the execution of this Act by the person or parties who shall have applied by memorial in such case, and by said last-mentioned Commissioners be paid over to the Consolidated Fund; and in default of payment by such person or party who shall have applied by memorial as aforesaid, the amount of such expenses shall be recovered from such person or party in such manner as by said first-recited Act is directed for the recovery of unpaid balances of preliminary expenses under the provisions of said first-recited Act.

(Appendix, No. 2.)

Memorial under Ordinary Proceedings.

Acts 5 & 6 Vict. c. 89; 8 and 9 Vict. c. 69; 9 Vict. c. 4.

To the Commissioners appointed for the execution of the Act 5 & 6 Vict. c. 89, intituled "An Act to promote the Drainage of Lands and Improvement of Navigation and Water Power, in connexion with such Drainage in Ireland," and the several Acts amending the same.

The Memorial of the undersigned,

Showeth,

That your memorialists are proprietors of (*a*) certain tracts of land adjoining the (*b*) near in the count of which lands are generally of nature, and are supposed to contain about acres, and extend for about miles along said (*c*) from to which lands are flooded, or otherwise injured by water, for about months in the year, and are capable of being drained and improved.

(*a*) If any of the memorialists be not proprietors, introduce here the words "and persons interested."

(*b*) "River" or "Lake" (as the case may be), naming it.

(*c*) "River" or "Lake."

That (*d*)

(*d*) Here state any prominent fact connected with the case, such as that the public roads are flooded, or that the floods are increased or caused by public bridges, mills, &c., if there be any such facts or causes connected with the case; or if it be desirable to make or improve any navigation or water power in conjunction with the drainage, it may be here stated in brief general terms.

That

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That your memorialists are desirous of availing themselves of the provisions of the Drainage Acts above referred to, for the purpose of relieving the said lands, and such others as your Board shall consider may be relieved by the necessary works, from flood and other injury by water.

That your memorialists are ready and willing to deposit such sums as your Board shall deem necessary on account of the several preliminary proceedings required to be taken, and hereby undertake to pay such further sum as may be required by you for such purpose.

And your memorialists therefore pray that all the lands so flooded may be drained, and the drainage of all the lands so injured may be improved,

(*e*)

under the provisions of the aforesaid Acts.

Dated this day of 184 .

Present when signed,

Witness,

(*e*) If a navigation be concerned, introduce here the words "and that the navigation of said River or Lake (naming it) may be made or improved."

N.B.—Where it is not necessary to fill the blank spaces in the Memorial according to the instructions above, let lines be drawn through them.

Persons signing are requested to write fully their Names, Addition, Residence and Post Town.

(Appendix, No. 3.)

MEMORIAL under Summary Proceedings.

To the Commissioners appointed for the execution of the Act 5 & 6 Vict. c. 89, intituled "An Act to promote the Drainage of Lands and Improvement of Navigation and Water Power, in connexion with such Drainage in Ireland," and the several Acts amending the same.

Acts 5 & 6 Vict., c 89; 8 & 9 Vict., c. 69; 9 Vict., c. 4.

THE MEMORIAL of the undersigned,

Showeth,

THAT your memorialists are proprietors of (*a*) certain tracts of land adjoining the (*b*) near in the count of which lands are generally of nature, and are supposed to contain about acres, and extend for about miles along said (*c*) from to which lands are flooded, or otherwise injured by water, for about months in the year, and are capable of being drained and improved.

That (*d*)

That your memorialists are desirous of availing themselves of the provisions of the Drainage Acts above referred to, for the purpose of relieving the said lands, and such others as your Board shall consider may be relieved by the necessary works, from flood and other injury by water, and that this application should be dealt with by the Commissioners under the "Provisions for Summary Proceedings," under the Act of 9 Vict. c. 4.

That your memorialists hereby undertake to pay to you the costs and expenses of all preliminary inquiries under the provisions for summary proceedings, under said last-mentioned Act, as to the works for the drainage and improvement of said lands, in the event of such works not being proceeded with by you.

And your memorialists therefore pray that all the lands so flooded may be drained, and the drainage of all the lands so injured may be improved, under the provisions of the aforesaid Acts.

Dated this day of 184 .

Present when signed,

Witness,

(*a*) If any of the memorialists be not proprietors, introduce here the words "and persons interested."

(*b*) "River" or "Lake" (as the case may be), naming it.

(*c*) "River" or "Lake."

(*d*) Here state any prominent fact connected with the case, such as that the public roads are flooded, or that the floods are increased or caused by public bridges, mills, &c., if there be any such facts or causes connected with the case; or if it be desirable to make or improve any navigation or water-power in conjunction with the drainage, it may be here stated in brief general terms.

N.B.—Where it is not necessary to fill the blank spaces in the Memorial according to the instructions above, let lines be drawn through them.

Persons signing are requested to write fully their Names, Addition, Residence and Post Town.

Appendix D.

(Appendix, No. 4.)

Drainage Acts, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; and 9 Vict. c. 4.

ASSENT for Ordinary Proceedings.

District of

WHEREAS, under the provisions of an Act passed in the sixth year of the reign of Her present Majesty, intituled "An Act to promote the Drainage of Lands and Improvement of Navigation and Water Power, in connexion with such Drainage in Ireland," and of two further Acts, passed respectively in the ninth year of the reign of Her said Majesty, amending the same, it is proposed to drain, and improve by drainage, certain lands within the district designated by the Commissioners for the execution of the said Acts, the district of in the count of
for which purpose certain maps, plans, sections, estimates and schedules have been lodged for public inspection, as by said Acts directed, at
in the count of and which said maps, plans, sections and estimates are signed by two of the Commissioners for the execution of the said Acts:

And whereas I, the undersigned, am a proprietor, within the terms of said Acts, of some of the lands within said district, that is to say, the lands of

Now these presents witness that I have assented, and do hereby assent, as such proprietor, to the execution of the works for the drainage, and improvement by drainage, of the lands within said district, by the said Commissioners, pursuant to the provisions of the said Acts.

Witness my hand this day of 184 .

Present,

the undersigned being tenant of of the above-mentioned lands, whose concurrence in the above assent is required, under the provisions of the said Act, do hereby consent to the execution of the said works.

Witness hand this day of 184 .

Present, when signed by

(Appendix, No. 5.)

Drainage Acts, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; and 9 Vict. c. 4.

ASSENT for Summary Proceedings.

District of

WHEREAS an Act was passed in the sixth year of the reign of Her present Majesty, intituled "An Act to promote the Drainage of Lands and Improvement of Navigation and Water Power, in connexion with such Drainage in Ireland:" And whereas another Act was passed in the ninth year of the reign of Her said Majesty, intituled "An Act to amend an Act of the sixth year of Her present Majesty, for promoting the Drainage of Lands and Improvement of Navigation and Water Power, in connexion with such Drainage in Ireland:" And whereas a further Act was passed in the said ninth year of the reign of Her present Majesty, intituled "An Act to amend the Acts for promoting the Drainage of Lands and Improvement of Navigation and Water Power, in connexion with such Drainage in Ireland, and to afford facilities for increased Employment for the Labouring Classes in Works of Drainage during the present year:" And whereas, under the provisions for summary proceedings in the said last-recited Act contained, it is proposed to drain, and improve by drainage, certain lands within the district designated by the Commissioners for the execution of the said Acts, the district of in the count
for which purpose copies of the Report of Esquire, civil engineer, with the opinion of the said Commissioners thereon, have been lodged for public inspection, and of which notice has been given, as by said last-recited Act directed:

And whereas I, the undersigned, am proprietor, within the terms of said Acts, of some of the lands within said district, that is to say, the lands of

Now these presents witness that I have (*a*) and do hereby (*b*) as such proprietor, (*c*) the execution of the works for the drainage, and improvement by drainage, of the lands within said district, by the said Commissioners, under the provisions for summary proceedings in the said last-recited Act contained, and pursuant to the provisions of said three severally recited Acts.

(*a*) "assented to" or "dissented from."
(*b*) "assent" or "dissent from."
(*c*) "to" or "from."

Witness my hand this day of 184 .

Present,

the undersigned, being tenant of of the above-mentioned lands, whose concurrence in the above assent is required, under the provisions of the said Acts, do hereby consent to the execution of the said works.

Witness hand this day of 184 .

Present, when signed by

(Appendix, No. 6.)

Appendix D.

FORM of DEBENTURE.

No. DEBENTURE to Lender of Money.

Amount, £.

Drainage, Navigation and Water Power in Ireland, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; and 9 Vict. c. 4.

District in the County of } No.

BY virtue of an Act passed in the sixth year of the reign of Her Majesty Queen Victoria, intituled, "An Act to promote the Drainage of Lands, and Improvement of Navigation and Water Power in connexion with such Drainage in Ireland," and also of two other Acts passed in the ninth year of the reign of Her said Majesty, amending the same, we, the undersigned, being two of the Commissioners for the execution of said Acts, in consideration of the sum of sterling, to us lent and paid by do hereby certify, and it is hereby witnessed that the monies to become payable to the said Commissioners for the execution of the said Acts under their final award for and in respect of the drainage, improvement, navigation, construction of reservoir (or other work, &c. &c., as the case may be) in the district of in the county of particularly mentioned, described and referred to in the declaration (or final notice, as the case may be) made on the day of by of the said Commissioners (or issued and published in the case of final notice, as the case may be), and deposited and registered, pursuant to the said Acts or this Act, are hereby charged with the repayment of said sum of such repayment to be made to the said or other the person entitled thereto, by endorsement hereon, in one payment, at such time after the expiration of years from the date hereof, as may be appointed by the said Commissioners, pursuant to notice to be given for that purpose, with interest at and after the rate of per centum per annum, such interest to commence and to be computed from the day of the date hereof, and be payable half-yearly on each first day of January, and first day of July, until the principal sum shall be repaid or be repayable pursuant to notice as aforesaid, which sum so lent and advanced by the said was taken up and borrowed by us for the purposes of said Acts.

In witness whereof we have hereunto set our hands and seals, this day of

Office of Public Works, Dublin. } Commissioners.

Entered

Drainage Acts, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4.

CIRCULAR to Engineers engaged in Preliminary Inquiries.

1. ENGINEERS, when instructed to examine districts, are to report the names of any assistants that may be requisite, with the rate of pay they are considered worth, that the approval or otherwise of the Commissioners may be had.

This rule not to be departed from unless in very urgent cases.

The engineers are, however, to be responsible for the accuracy of the work done by such assistants.

2. The district engineers are to report their progress weekly, stating the probable time when they shall have finished the examination of any district in their charge. Both district and assistant engineers, when employed directly under the Board, are to report their residence and post town at each change of quarters, and also their arrival at and departure from Dublin.

3. The district engineers to furnish their accounts monthly, before the fifth day of each month (on the printed forms to be had from the secretary), together with all authorized expenses of themselves and assistants separately for each district. Each account to show the total charge for the period for which the account is made, as no outstanding or omitted accounts will be taken into consideration, unless good reason can be shown for the omission.

Journals are to be kept by the district engineers, and transmitted, with those of their assistants, when furnishing their accounts.

Departure from these rules will cause a delay in the payment of the accounts until complied with.

4. Engineers reporting on cases under "Summary Proceedings" are to make a separate report on the state of the district, as regards distress existing, or likely to exist, in the ensuing summer.

This information should be prudently collected on good authority, and will be essential, to enable the Commissioners to judge, in cases where remuneration from the proposed pro-

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jects is doubtful, whether or not the works should be proceeded with under the summary proceedings.

5. Engineers in every case to report the name, residence and post town of some person or persons in the district, where it would be most convenient that the reports can be deposited for public inspection or for sale, and to make arrangements with such persons, and if possible to agree with them for the rate of remuneration (if any) they should receive for keeping the documents for inspection—excessive charges have at times been made from the want of some such agreement.

6. The district engineers are to cause their assistants when collecting the names of the proprietors, to add the residence and post town of same, and in cases where these cannot be procured, to give the names and address of their agents, bailiffs, or some authorized managers, to whom copies of the reports can be sent.

7. The accompanying memoranda as to the course of proceeding, and some of the principal provisions of the Drainage Acts, for drainage alone, afford information with which it is essential the engineers and other persons engaged in preliminary inquiries should make themselves fully acquainted.—See the definition of Proprietors, &c.

8. A copy of the memorial, the Ordnance survey of the district, together with any surveys, &c. supplied by the parties interested will be furnished to the engineers for their information, together with field books, forms of accounts, &c., and in the event of their being supplied with an insufficient number of the sheets of the Ordnance survey or forms of accounts, field books or other requisites, the engineers will send to the secretary a requisition for same. To enable them to do this, in the matter of Ordnance sheets, the index map of each county in which they are to be engaged will be furnished to the district engineers, on their application, and they are requested to be particular in giving the numbers of the maps required, as much delay will be avoided thereby. Copies of the Acts of Parliament will also be supplied.

The extent of the catchment basin of each district to be calculated from the Ordnance plans, and stated in each report.

All documents relating to districts under examination are to be returned to the Office of Public Works, with the engineers' reports, viz. Ordnance townland maps, field books, rough sections, estimates in detail, calculations, and any other documents relating thereto. Fair plans, &c., when ordered to be made, are to be furnished in duplicate.

9. Engineers are to inquire into the facilities for procuring tools in or near districts where the works are likely to be carried on, under the provisions for "Summary Proceedings;" also, to inquire as to the most suitable places for storing such tools. After the Commissioners' sanction shall have been obtained, they are to make arrangements with some responsible persons, interested in the success of the proposed measures, to take charge of same, all which they are to report for the information of the Commissioners.

10. It will be desirable in all cases that the assistants who collect the names of the proprietors under the summary proceedings, should also be employed to collect the assents, after the report shall have been deposited, as, from their knowledge of the localities, much time and trouble will be saved. The district engineers are, therefore, requested to make such arrangements as will ensure compliance with this order, whenever it can be done without interfering with matters of paramount importance.

By order of the Commissioners,

Office of Public Works,
Custom-house, Dublin, 13 April 1846.

Joseph C. Walker, Secretary.

(Circular.)

Sir, Office of Public Works, Dublin, 14 May 1846.

I am directed by the Commissioners of Drainage to request that you will give the names of those tenants having leases (whose concurrence will be necessary), when finishing your report on districts to be examined by you. This information to be given in a separate list.

You will also be required to give quantity of flooded and injured land held by each proprietor.

By Order,

(signed) J. C. Walker, Secretary.

Drainage under the Acts 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; and 9 Vict. c. 4.

Circular Memorandum to accompany Letter of Appointment to each of the District Engineers.

The Commissioners propose to put several drainage districts under the charge of one district engineer, whom they hold directly responsible for the proper execution of all the works, the expenditure of the money, and the general conduct of all matters connected with such districts, and for carrying practically into effect the provisions of the Drainage Acts in relation thereto.

Measures

Measures of this kind, involving an expenditure to be repaid by the property to be benefited, will require a most scrupulous and zealous attention to true economy, and the adoption of a clear and uniform system, to ensure success.

The Commissioners will rely with confidence upon the district engineers to carry out such a system; and whilst they remind them of the responsibility of the duties required, they wish also to observe that the faithful, judicious and zealous discharge of these duties will confer a high character upon the engineers themselves.

1. As a first step, it will be expedient that a proper system of account be established, and each district engineer will be allowed to have an active, intelligent accountant or clerk to have charge of the district engineer's office, keep the principal accounts of each district, the general account of stores, and perform such other duties as the engineer shall require of him. This officer will be paid a yearly salary, to be apportioned on the districts under the engineer's charge.

2. One or more (according to extent) principal overseers, practical experienced men, to be approved by the Board, will be appointed to each district, together with such stewards or sub-overseers and working gangers as may be requisite.

3. An assistant engineer, or good practical surveyor, will also be allowed to be employed, when approved by the Commissioners, for laying out the work, and having charge, under the control of the district engineer, of one or two or more contiguous districts. In districts of small extent, it will be only necessary to employ such a person temporarily, to lay down, at a large scale, a working plan and section in detail of the whole district, for the guidance of the overseer.

4. The district engineers will prepare, with as little delay as possible, a minute specification and estimate in detail of all the works to be executed in each district for their own guidance and that of the assistant engineers and principal overseers in the execution of the works, and in keeping the expenditure within the estimate. A copy of such specification and estimate to be furnished to the Commissioners.

This specification, when approved by the Board, is not to be departed from without the express sanction in writing of the Commissioners.

This estimate should be made under a considerable number of heads, and in such detail as will save expense in measurements, and facilitate the letting of the works on the system of task-work.

The amounts of all works chargeable under the provisions of the Acts to counties, to navigation, or to improved mill-power, must be kept separate and distinct from those of drainage, and the proportionate share of all incidental expenses and superintendence added thereto.

5. In each district a good check clerk will be required, with perhaps the aid of one or more time-keepers, to keep and prepare all the accounts of the district, and furnish the same for payment. This officer should be highly trustworthy, and, if possible, should have some knowledge of measuring work, and of maps and sections: he might be of a class to be subsequently promoted to be assistant engineer or overseer.

The appointment of such an officer is in no way to absolve the overseer, who is immediately in charge of the work, from the necessity of keeping proper check accounts of all the works under his charge.

6. A journal or minute book is to be kept in the district engineer's office of all principal proceedings in each district, and in addition, each person of whose appointment the Commissioners' approval is required, together with such others as the district engineers shall direct, is to keep a daily journal of his proceedings and duty performed, and to have the same filled up each day, prepared for the inspection of the Commissioners or the district engineer, or other person under whose control such person shall be placed.

7. One or more paymasters will be appointed by the Commissioners for the payment of all monies to be expended by or under the control of each district engineer, and no payments whatever are to be made by any other person; nor is the district engineer to permit, under any circumstances, any money dealings on account of the works to take place between the people employed and the officers under his control.

The district engineer will fix pay days for each district, with an interval of a fortnight between each, and have it publicly notified to all persons upon their being employed, that payments cannot be made upon any other days than those upon which the paymaster attends in the district; and it will be necessary for the district engineer to make such arrangements with all persons under his control, in conjunction with the Accountant's department of the Board and the paymaster, as will ensure the punctual payment of the people on the day fixed for the purpose.

8. In every case where it is practicable, the works are to be carried on by task, the men employed being required to form themselves into gangs of 10 or 12 or more, and to divide equally amongst themselves the amounts earned; whilst to facilitate accounts and management, each gang is to be required to appoint one of their number to act as leader, to receive instructions, and the money due for the work performed.

This system has been successfully carried out in the drainage works heretofore executed under this Board; and the Commissioners require the district engineers to make themselves practically acquainted with the details of the arrangements adopted, and to use their utmost exertions to carry them fully into effect. In every case, employing the least possible number of men by the day, and training all the persons under their control into the adoption of such a temperate yet firm system of management as will ensure strict obedience on the part of those employed, and produce a conviction that the system is adopted for their own good.

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9. It is the desire of the Commissioners, in every instance, to improve the habits, knowledge and system of working of the people employed, and that the works, both in their progress and completion, shall be instructive, and examples for the future guidance of the locality. With this view, improved tools, implements and machinery (whenever requisite), are to be supplied, and their adoption gradually but temperately enforced. Men are to be employed as working gangers or sub-overseers, competent from their skill and experience to teach the best systems of working, and using the tools referred to; the success of such sub-overseers or gangers in these objects being made the ground for their promotion both in pay and station, if their conduct in other respects be worthy of it.

It will also be an object of great importance for the engineers to prove practically that the work is well executed, and the improved modes of working are, in effect, cheaper than any other, consistently with ultimate success. Failing in this respect, the example would lose the greatest portion of its beneficial effect.

10. In the commencement of the drainage works, and especially during the present season, when the paramount object is to afford employment to the greater number of persons that can be conveniently employed, the engineers are directed to avoid, in the first instance, any difficult or complex works, or works requiring much mechanical skill, until the people in the district become trained to the proper system of working.

11. At present it will be desirable to spread the employment as much as possible throughout the greater portions of each district; and for this purpose no work would perhaps be more suitable, or better calculated to train the people to the task system, than to open existing drains, or cut new drains, which will be required as taps or unwatering courses, into which the rivers and streams may be turned during the execution of the main works.

This is a class of work with which the agricultural labourer in most parts of the country is well acquainted, and therefore less difficulty will be experienced in commencing with it.

12. In any cases of combination or resistance to the adoption of the system ordered by the Board, if, after temperate and judicious explanations by the engineer, the people do not readily acquiesce in the arrangement, the district engineer will forthwith suspend the works, and remove the tools into store.

13. The district and assistant engineers, check clerks, overseers, and others specially employed by the Commissioners in the execution of works, will be required to devote their whole time to the service, excepting only when employed in such other duties as they may be required to perform by the Board, and for which their special sanction shall have been previously obtained in writing.

By Order,

Office of Public Works, Dublin,
June 1846.

(signed) Jos. C. Walker, Secretary.

Instructions for Assistant Engineers.

1. The attention of the assistant engineer is requested to the accompanying copy of a circular memorandum addressed by the Commissioners to district engineers, and also to the instructions which have been prepared for the guidance of overseers, check clerks and time-keepers, copies of which are forwarded herewith.

The first-mentioned paper is forwarded for the purpose of putting the assistant engineers in possession of the intentions and views of the Commissioners, as to the mode in which the works are to be carried on.

The assistant engineer is appointed, subject to the approval of the Commissioners, by the district engineer, who is held "directly responsible by the Board, not only for his fitness, but also for the proper execution of the works, the economical expenditure of the money, and the general conduct of all matters connected with the districts." It is, therefore, indispensably necessary, that the assistant engineer should pay particular attention to the following general regulations as well as to any others that may from time to time be issued, whether by the Board or the district engineer; and it will be his duty to see, that the overseers, check clerks and time-keepers, employed on the district to which he is attached, shall carry out strictly the instructions prepared for their guidance in the discharge of their respective duties.

Copies of the printed circulars heretofore issued by the Board, with reference to drainage works, are forwarded herewith, and copies of any that may hereafter be issued shall be forwarded from the district office for the information of the assistant engineer. There are some of these circulars which do not refer directly to the duties he has to perform, but he is nevertheless required to make himself fully acquainted with them, as, by obtaining a knowledge of the whole system laid down for the carrying out of the works, he will be the better able to understand and perform satisfactorily the duties allotted to himself.

Overseers, Check Clerks.

2. All overseers, check clerks, time-keepers and gangers, are appointed by the district engineer, subject (as regards the two first-mentioned classes of officers) to the previous approval of the Board. They are all subject to the immediate control of the assistant engineer, whose orders they are to attend to in the absence of the district engineer; and in any case of neglect of duty or other misconduct on the part of such overseers, check clerks, &c., it will be the duty of the assistant engineer to report the circumstance to the district engineer, who will, at his discretion, fine or dismiss the party so acting, if the circumstances of the case shall warrant such a course.

3. The

3. The gangers employed in each division of a district are placed under the direct control of the overseer of that division, as explained in the 14th paragraph of the instructions to overseers, and it is desirable, for the establishment of proper discipline and order amongst the men, that the overseer should properly exercise this control, that the men may see that he is so authorized. He is accordingly empowered by the 16th paragraph of his instructions, to dismiss any labourer who is guilty of neglect of duty or insubordination. The overseer, however, is always to receive his general instructions from the engineer, as to the number of men to be employed, and the work to which they are to be put. And the engineer should be particular in seeing that no favouritism on the one hand, or undue harshness on the other, be practised towards the men. If he should observe a tendency to such a course on the part of the overseer, he should reprimand him for it privately (but never openly before the men), and, if necessary, report the circumstance to the district engineer. Gangers.

4. The check clerk and overseers are entirely independent of each other, their duties are distinct, and one has no control over the other.

5. In every case where it is practicable, the men are to be employed by task. The mode of carrying out this system is clearly explained in the Board's memorandum, and fully detailed in the instructions to overseers and check clerks. Task-work.

6. The most important duties of the assistant engineer are those relating to the laying out in detail and measuring the works, and properly preparing the accounts for examination previous to payment. Laying out work.

7. Working plans and sections of the works in each district, will be furnished to the assistant from the district engineer's office. The assistant engineer is to lay out the works on the ground strictly according to these plans and sections. In any place where an alteration may appear to be advisable after the works shall have been set out, he is to report the circumstance, and suggest what he considers the best course to be adopted; but in no case is any deviation to be made from the plans furnished without the sanction of the district engineer. Working plans and sections.

8. For the purpose of letting by task, the earth-work is to be laid out in lots varying in length, according to the cross sections of the cut, the number of men in a gang, and other circumstances peculiar to each case. Each lot to be distinctly marked out by lockspitting or otherwise, and at least two levels given for the depth, one at each end of the lot, and more, if the nature of the ground requires; the overseer and workmen are to be fully instructed as to the dimensions of the cut, the depth they are to go below each fixed level, and the position in which they are to deposit the spoil. The quantity of material to be removed is to be accurately measured by the assistant engineer before letting the work, and a price is to be fixed for it as it proceeds, according to the difficulty of the excavation. The general principle or scale of price under different circumstances will be determined by the district engineer, whose judgment and experience must guide him in the matter. Letting work by task.

9. Each lot of work, as laid out and let, is to be marked on the working plan and section, and distinguished by a number, through the medium of which it is to be referred to in the accounts. The calculated quantity in each lot is to be registered on the plan and section, under the number of the lot. Each lot to be marked on plan.

10. When any new length of work is laid out and let, the assistant engineer is to furnish to the district office a tracing from the plan of that portion of the work, on which is to be marked in red the divisions between the lots, also, the number of each lot, the probable quantity in it, the price per cubic yard at which let, and the name of the leader of the gang. Tracing to be furnished.

11. The measurements of work done in each lot are, as a general rule, to be made fortnightly, on a day to be fixed by the district engineer for each district. This duty is to be performed by the assistant engineer himself, who is held responsible for the accuracy of such measurements. When a lot of excavation has been but lately commenced, it will generally be found more convenient to make a measurement of the work executed; but when the quantity of excavation is more than half done, the more expeditious and equally accurate method will be to measure the work remaining to complete the lot, and deduct that from the calculated quantity registered on the plans. The remainder will of course be the work done, and if any payments have been previously made on account of the lot, the quantity previously returned is to be deducted from the total work done, and the balance will be the quantity removed since the last period. Fortnightly measurements.

12. The assistant engineer is required to make himself fully acquainted with the proper manner of preparing the accounts for labour, expenditure exclusive of labour, and the abstract of accounts, all which are to be furnished fortnightly with the necessary vouchers. He will receive detailed instructions in these matters at the district office, and he will be held responsible for the punctual furnishing to that office of the accounts at the appointed time. Any irregularity in this respect tends to the derangement of the whole system of business in the district engineer's office, and must of necessity cause a delay in the payment of the men. Accounts.

13. Under certain circumstances weekly payments must be adopted. Special forms of accounts have been prepared by order of the Board for this purpose, and forwarded to the district engineer, with full instructions as to the mode of filling them, and making all arrangements necessary for the temporary adoption of this system of weekly payments whenever it may be necessary. Weekly payments.

14. It is essential that the weekly returns of men employed should be forwarded punctually Weekly returns.

Appendix D.

tually by each Sunday's post, as mentioned in the 3d paragraph of instructions to check clerks, so as to reach the Dublin office on Monday morning.

Monthly accounts. 15. On the 1st day of each month the assistant engineer is to fill up and forward to the district office his employment return, and bill for his own salary and allowance for the preceding month.

Office. 16. Each assistant engineer will be supplied with an office for the transaction of the business connected with the district or districts to which he is attached.

Journal. 17. An office journal is to be kept for each district, setting forth the number of men employed each day, the portions of the district at which employed, the progress made, and showing particularly the date of commencing or completing the works in each or any part of the district, the delays caused by floods, bad weather or otherwise, the particulars of any cases of combination amongst the men, and any other information that may appear likely to be useful; a monthly abstract of this journal, a brief memorandum of the past month's proceedings, &c. in reference to each district, is to be supplied by the assistant to the district engineer, on or before the 2d day of each month, to enable him to prepare his monthly report, as required by the Board.

The number of men employed to be filled into this journal regularly each day by the check clerk, and the observations on progress, &c., to be written by the assistant engineer.

Store books. 18. The assistant engineer is also to inspect the store books of receipt, and issue of tools and materials ordered to be kept by the check clerk or storekeeper, as the case may be.

19. In cases where an assistant engineer is attached to more than one district, he will have to keep a separate set of office books for each.

Copies of accounts. 20. Copies of all accounts relating to the district are to be kept in the assistant engineer's office, and also an abstract of such accounts, kept in a book which will be provided for the purpose, showing the amount expended on each division of the district. This book should be carefully filled up each fortnight, and frequently examined by the district engineer, in order that he may be able to compare the expenditure on each district and division with the estimates for such district and division, and thus see whether or not the work is being done within the estimate.

Estimate. 21. A copy of the estimate will be furnished by the district engineer, showing in detail the amount estimated for each division; for each bridge, mill, and other such work; for contingencies, superintendence, and all other specific heads of account, and a copy of the total expenditure will also be supplied to the assistant engineer monthly, to enable him to regulate his operations accordingly.

Plant and Tools. 22. The assistant engineer is to see that there is always a sufficient stock of tools and working implements in his district; and whenever he ascertains from the overseer of a division that any such tools or implements are required, he is either to supply them at once from the store belonging to the district, or send a requisition for the articles to the district office.

Printed Forms. 23. Each assistant engineer will be held responsible for keeping himself always supplied with a proper stock of printed forms for pay sheets, and all other returns, so that no delay may be caused in the furnishing of the accounts, for want of such forms, which can be obtained upon requisition to the district office.

Requisitions. 24. Requisitions are to be sent in along with the monthly accounts, and the quantity of each sort of forms demanded (together with what may be in store at the time) should be sufficient to last for at least six weeks, so that there may always be sufficient for use during the interval, between sending in the requisition and receiving the supply.

Stationery. 25. Drawing paper and tracing paper will be supplied from the district office. Pens, ink, writing paper, and other articles for office use are to be procured by the assistant engineer at the most convenient place, and the bills for such articles are to be forwarded for insertion in the sheet of expenditure, "exclusive of labour."

Order book. 26. An order book is supplied to each assistant engineer; and whenever any articles are required from shopkeepers or tradesmen for office use, or for use on the works, he is to issue an order for it on the proper form, which order is to be furnished along with the accounts when sent in for payment.

Applications relative to works. 27. In the event of any application being made to the assistant engineer, by any person interested in the drainage district to which he is attached, or by any other person except the Commissioners or their authorized officers, for any important information relative to the works in progress of execution, or to be executed in any part of the district, he is to refer the party making such application to the district engineer, and if the application be in writing, he is to forward it to the district office, and write to inform the party applying of his having done so.

Copies of plans, &c. 28. He is not to allow any person, except a known authorized officer, to get a copy of, or extract from, any manuscript, plan, section or other document relating to the district, without special authority from the district engineer.

Disturbances on works. 29. In all cases of disturbance, threatening notices, combination, or accidents on the works, the assistant engineer is to report the circumstances immediately and fully to the district office, and to forward the report either by post or by special messenger, whichever may be the most expeditious mode. In cases of emergency he is to forward a duplicate of the report direct to the secretary; this is, however, only to be done in cases of great importance where the delay of one day would be a matter of serious consideration, as it is not desirable that documents should be unnecessarily multiplied, or that the Board should receive two reports on the same subject. If such a case should occur, it is to be stated in the report to the district engineer that a copy has been forwarded to the secretary.

If

If circumstances should warrant such a step, the assistant engineer is to suspend the works until he receives instructions from the district engineer, rather than call for the assistance of police or military.

Annual Report.

30. As the district engineer is required to send in an annual report on the progress of the works in all districts under his charge, he will require each assistant engineer to prepare and furnish to him before the 5th day of January in each year, a short report on the progress of the works under his immediate charge during the preceding year, and returns of men employed, and quantity of work executed, which returns are to be made out in regular forms, copies of which will be provided for the purpose. As a general rule, the assistant engineer is to visit some portion of the works each day, unless very particular office business should arise to prevent him.

Instructions for Overseers.

1. The overseer is expected to be constantly on the works from the commencement of the working hours in the morning till the men leave off in the evening.

2. In the absence of the district engineer, the overseer is always to receive his instructions from the assistant engineer, and he is to be very particular in having the works executed strictly according to the dimensions, levels, forms and instructions given for his guidance.

3. In order to enable the overseers successfully to promote sober, regular and industrious habits among the persons employed, it is necessary that they themselves shall set the example.

4. The overseers should not permit smoking during working hours, nor working in great coats, nor any habits denoting a want of due exertion.

5. Should he happen, in the discharge of his duty, to meet with any observation from any proprietor or other person interested in the district, he is to be respectful in his communications and demeanour, and report the circumstance at once to the district or assistant engineer. He is expected to be temperate in his conduct to all parties, even to his inferiors under provocation.

6. He is always to carry about with him his book, in which is to be entered distinctly in ink, the agreement made with each gang for task-work, and the measurement of such lot of work.

Task-work.

7. In every case where it is practicable the works are to be carried on by task; for this purpose the labourers are to form themselves into gangs of limited numbers, as may be directed by the engineer, and to appoint one of the number in each gang to be their leader, and the receiver of their money.

Form of agreement.

8. It is desirable, if possible, that the man selected as gang-leader should be able to write, and keep an account of the time worked by each man in his gang, as he will have to divide the money among them, according to the time worked by each, paying himself at the same rate as the others.

Baronies.

9. In order to facilitate the keeping of the accounts of men employed from the different baronies, it is desirable, in forming the gangs, that each gang shall consist of men living in the same barony.

10. The overseer is to be careful to explain the foregoing arrangements as to task-work to all the men employed.

Regularity in working hours.

11. All men employed, whether by task or otherwise, are required to be regular in their attendance at work, being on the ground at the hour appointed for commencing in the morning, and remaining until the hour appointed for leaving off in the evening, and taking their meals at the regular hours. Men employed by task may, however, if they please, work extra time, by beginning before the usual hour in the morning, or remaining after the usual hour in the evening, or both.

Tools.

12. Every effort should be made to introduce, and to encourage, the use of the most approved tools and implements, and the most advantageous modes of working. These tools will be supplied whenever required, and their adoption by the people is to be gradually and temperately enforced.

Gangers.

13. When the size of the division in charge of an overseer requires it, one or more gangers or sub-overseers will be appointed to assist him, and to teach the people the best systems of working and using the tools referred to. The efficiency and success of these gangers in this object will be made the grounds for their advancement. The overseer is to see that they perform their duties properly, and in any case of neglect on their part he is to report them to the assistant engineer.

Trial pits.

14. When the work which is to be set by task is the making of a new cut, and the material to be excavated does not consist of rock, trial pits should be sunk in each lot, to enable the engineer to fix on a fair price for the work.

Dismissal of labourers.

15. The overseer may, and is required to, discharge any labourer (whether employed by the day or by task) who is guilty of neglect of duty or insubordination, taking care to enter such circumstances in his book, and to report them on the first opportunity to the assistant engineer, but he is not authorized to increase the number of persons directed to be employed, nor alter their rate of pay, nor to put men to any new work without first receiving his instructions from the district or assistant engineer.

Supply of tools.

16. He is to see that the men under his charge are supplied with a proper stock of tools, planks, &c., and he is to apply immediately to the assistant engineer for such materials, &c., as may be required.

Appendix D.

Disposal of spoil.

17. He is to pay particular attention to the manner in which the spoil from the cutting is disposed of; whenever practicable it is to be made use of in filling up old river-courses, or unprofitable hollows in the ground, taking care, in such cases, to have the best portion of the stuff retained for spreading over the surface. Where this cannot with advantage be done, the spoil must be formed into a regular-shaped bank, carefully levelled off and sloped. The overseer will ascertain from the assistant engineer, before commencing any new cut, how the spoil is to be disposed of, and he is then to see that the instructions are properly carried out during the execution of the works, so as to avoid, if possible, any second shifting.

Check Clerk.

18. During the time that the check clerk or timekeeper is unavoidably absent from the works (while performing his office duties), the overseer is to keep an account of the time, both of days-men and task-men, on a form to be prepared for him by the check clerk, and from which the check clerk is to fill in his own book on his return to the works.

19. For neglect of any of these duties the overseer is liable to be fined a portion of his pay, to be determined by the district engineer, and entered on the face of the return in which his pay is entered, and a continuance or repetition of misconduct, or any exhibition of disobedience or disrespect to the district or assistant engineers will be attended with dismissal.

Instructions for Check Clerks and Timekeepers.

Duties of Timekeeper.

Hours of attendance.

1. The timekeeper is to be in attendance on the works from the regular hour of commencing work in the morning to that of leaving off in the evening; to keep an accurate account of all men, boys, horses, boats, &c. employed by the day; each man's time to be checked once during each quarter of the day, and entered in the regular book provided for the purpose.

Mode of entering men's time.

2. In entering the time in the column headed with the name of the day, and opposite the man's name, the first quarter is to be represented by a perpendicular line (thus |); the second quarter, by a horizontal line at bottom, forming the second side of a square (thus |_); the third quarter, by the third side of the square (thus |_|); and the fourth quarter, by a line completing the square (thus |□|). In cases where men work extra time, the extra quarters are to be represented by diagonal lines within the square, thus |□| represents a day and a quarter, and |⊠| represents a day and a half.

3. These entries are to be made in ink at once, in order to avoid mistakes, which frequently occur in inking in pencil marks. It is also to be remembered, that the first quarter is always to be represented by the left-hand side of the square, the second quarter by the bottom, the third by the right-hand side, and the fourth by the top: by observing this rule, the timekeeper will always be able to specify what particular quarter or quarters of the day any man was absent, and thus be able satisfactorily to answer objections which may be raised against the correctness of the time check.

Time of task-workers.

4. The time of each task-work gang is to be kept in such a manner as that it can be ascertained at any time whether task-work is sufficiently remunerative, or otherwise.—*See* Form appended.

5. Ten hours' actual labour constitutes a day's work in summer, say from 1st of March till 1st of October; and eight hours for the five winter months.

6. It is very desirable that one time-book shall be made to contain all the particulars of the time, both of day and task work; and there seems a very simple mode of doing it with the book at present in use. Annexed is an example of the plan suitable for the Common Time Book in use, a line being devoted to each quarter of the day; 1st line, 1st quarter; 2d line, 2d quarter, &c. The portions of the day worked are noted, and great facility for checking is afforded, which can easily be done in the ordinary time books supplied by the Commissioners, and in the following manner:—

Common Time Book.—Week ending Saturday, 16th of January 1847.

No. of Lot.	Name of Gang Leader.	11th. M. No.	12th. T. No.	13th. W. No.	14th. Th. No.	15th. F. No.	16th. S. No.	Total per Week.	
	William Rutledge -	10	–	10	12	12	–	–	1st Quarter.
	„ - - -	9	–	10	12	12	–	–	2d „
	„ - - -	9	10	10	–	12	–	–	3d „
	„ - - -	–	10	–	–	–	12	–	4th „
		28	20	30	24	36	12	–	
	Total Days worked	7	5	7½	6	9	3	37½	

Return of number of men employed.

7. The detailed accounts of time worked by both days-men and task-men, as above described, are essential for the correct making out of the pay sheets.

8. The

8. The timekeeper must be prepared (each Saturday evening) with an account of the number of men employed each day of the past week on his particular work or division, distinguishing the men living in different baronies, in order to fill up the weekly return in the appointed form. This information to be supplied to the check clerk, or principal timekeeper, so that he may be enabled to prepare the weekly return of men for the district, to be despatched by Sunday's post.

9. This account can easily be made out from the time book, filled up in the manner above directed, by taking the precaution of ascertaining, in the first instance, to what barony any man employed by the day, or any gang employed by task may belong, and prefixing the initial letter of the barony name to that of the days-man or gang-leader in the book. The first column in the time book, which is headed No., may be divided into two for that purpose, the number being put in one division, and the initial of the barony in the other.

10. As a necessary convenience for making out this return, it will be desirable that each gang shall consist of men out of one barony only.

Account of tools received.

11. The timekeeper is to keep an accurate account of all tools and implements received on his work or division, and of those given out to each gang, and to check over frequently the tools in possession of each gang, in order to see if any are missing.

Tools repaired.

12. He is also to keep an account of all tools sent to be repaired to the smith or carpenter, where such work is done by contract, for the purpose of checking their bills; and of all tools sent to other works or divisions, so as to be able to account for all which have been received.

Duties of Check Clerk.

Weekly returns.

1. The check clerk is the principal timekeeper, and he is to spend all his time, except what his office duties absolutely require, upon the works. He is frequently to examine and check the timekeeper's books, and is to prepare each Saturday evening two copies of the weekly returns for his district; one to be forwarded by Sunday's post to the Secretary of the Board of Works, and the other to the District Engineer's Office.

Fortnightly accounts.

2. On the day previous to the fortnightly measurements, the check clerk is to prepare two copies of the labour accounts for the fortnight: these, when completed, to be forwarded to the District Engineer's Office. On the same day (or monthly, as the case may be) he is to forward the bills of all tradesmen, so as to have them ready for the examination and signature of the assistant engineer, previous to the preparation of the return of expenditure, exclusive of labour.

3. All measurements of work for payment are to be made by the assistant engineer, superintendent or district check clerk; and at the regular period for preparing the fortnightly measurement accounts, the district check clerk is to assist the assistant engineer to measure the work done, and is at all times to be ready to aid him in the performance of the duties he may have to fulfil in connexion with the works.

4. As soon as he can receive the timekeeper's returns of time worked, and the overseer's returns of work done, he is to fill in the blanks which he left for that purpose in the pay sheets, stating clearly the nature of the work executed in the column provided for that purpose.

Dockets for gang-leaders.

5. After the accounts shall have been despatched to the district engineer, the check clerk is to prepare dockets for each gang, which are to be given to the gang-leaders at the pay-table along with their money, setting forth the name of the gang-leader, the number in the gang, the period for which the payment is made, and the amount paid on account of each lot or contract, on which the gang has been employed during that period.

Payments.

6. The check clerk is to attend the paymaster when making the payments in his district, to certify the payments, and afford any information as to time, &c. which may be required.

Weekly payments.

7. In cases where weekly payments, by way of subsistence money, are adopted, certain alterations will have to be made in the mode of furnishing the accounts. These alterations are fully explained in the circular and sample forms forwarded to the assistant engineer, and will be explained by him to the check clerk.

Office books.

8. The check clerk is also to supply the necessary information for filling up the assistant engineer's office journal each day, as far as regards the number of men, &c. employed.

Timekeeper and Check Clerk.

In most cases where the district is large, and the works numerous and distant from each other, one check clerk is appointed for the whole district, who is to be assisted by a timekeeper at each work. The check clerks will also have to perform the duties of timekeepers in the portion of the district allotted to them. The foregoing instructions are to be strictly observed by persons employed in this manner; but during the time that their duties require them to attend in the office, which is very seldom, the overseer must keep the necessary accounts of time worked, &c., which the check clerk is to obtain from him immediately on his return to the works, and enter in his own book.

Fines.

For the breach of any of these regulations, or any others that may be issued, and more especially for any error or omission in the accounts of expenditure incurred within any particular period, the check clerk will be liable to a fine, to be affixed by the district engineer, and entered on the pay-sheet in which his pay is entered.

Independently of these instructions, it will frequently be necessary for the district engineer to issue further directions from time to time; in which cases they are to be attended to with equal strictness and punctuality.

Appendix D.

(Circular).

Office of Public Works, Dublin,
26 June 1846.

Sir,

I AM directed by the Commissioners of Drainage to request that you will, when furnishing your report upon any drainage district, also furnish the Commissioners with a return, certified by yourself, showing the total number of acres in the district; a list of the reputed proprietors and their lands respectively, with the quantity belonging to each; and, the names of the tenants who actually occupy the lands, and have leases, or agreements for leases, for a life or lives, or term of fourteen years or more unexpired, and, when collecting the assents, the quantity of land held by each such tenant who will not concur in his landlord's assent.

You are requested also to send up without delay certified returns as above, for any districts upon which you have already reported under summary proceedings.

As the above information is absolutely necessary before the issuing of any future final notice, I am to direct your special attention to the subject.

I am, &c.

(signed) Jos. C. WALKER, Secretary.

CIRCULAR to DISTRICT ENGINEERS.

Office of Public Works, Dublin,
24 July 1846.

Sir,

I AM directed by the Commissioners of Drainage to instruct you to pay the strictest attention to the accounts of expenditure on all works in your charge. They will require you to keep exact accounts of the expenditure on each separate work or reach of river, or natural division of the district, making in detail the estimate for each such division, before you commence any works therein.

In cases where you shall be entrusted with the execution of works, the designs and estimates for which have been made by other engineers, and approved by the Board, you, as the party to execute the work, will be held equally responsible, in every respect, as if you had prepared the estimates; and therefore it has been ordered, that estimates should be made in detail by you before proceeding with the work.

The Commissioners direct that an account be opened for each such work, reach of river, or natural division; or, where these do not exist, for each mile or more in length, of river or channel, as may seem best, heading each such portion of the accounts with the total estimate for same.

In laying out work for execution by task, you will be required to lay it out in lots, numbering them consecutively on the plan of the work, and referring to them by such numbers in your accounts, returns and other documents, or written communication in reference thereto.

Accounts of the receipt and issue of tools, and the receipt and issue of materials for the works, are also to be kept in the forms provided for that purpose.

By following this course, no excess of expenditure can occur without the knowledge of yourself and your clerk.

The Board require that between the 1st and 5th of each month an abstract of the whole accounts for each district be furnished in the annexed Form (E.), and that the accounts be so kept as to enable such an abstract to be furnished whenever called for, without incurring any further delay or trouble than merely transcribing the totals from the account books.

You will also be required, on or before the 15th of January in each year, to furnish an annual account of the whole of the works in each district, with a report of the whole of the proceedings connected therewith during the year, the progress made in the works, the quantity of tools and materials, and number of men employed, together with an abstract, to be printed with the Commissioners' Annual Report to Parliament, in the Form (F.) of the accounts of the district.

You are, therefore, held responsible to make such arrangements and keep such accounts as will enable you fully to comply with this order; and the journal ordered to be kept at the district office, and each station under your charge, must also be so clearly arranged and filled as to be made conducive to this object.

All accounts, documents and vouchers for each district to be kept separate, and as far as possible made up monthly, and arranged systematically in presses, so as to be easily referred to.

(By Order),

Secretary.

FORM

FORM (E.)

MONTHLY ABSTRACT.

ACCOUNT of EXPENDITURE.

_____ DISTRICT.

Count of _____

Total Estimate, £._____ Total Expenditure, £._____

Name of Work, Reach, Division of District, or other Head of Account.	Amount of Estimate.	Total Amount of Expenditure up to Date of this Return, on each Reach or Work.	Amount of Expenditure on extra Works (if any), sanctioned by the Board, in writing, referring to Date of Orders.	OBSERVATIONS.
	£. s. d.	£. s. d.	£. s. d.	
TOTAL - - £.				

I certify this Account to be correct.

_____ Clerk.

Dated this _____ day of _____ 184

Drainage Commission Office, _____ District Engineer.

_____ (Post Town.)

Form (F.)

Drainage, Navigation, and Water Power, under the Act 5 & 6 Vict. c. 89.

List of Districts in which the Works are in progress.

DISTRICT.	COUNTIES in which situate.	Date when Works commenced.	Area of Flooded and Injured Lands; Statute Measure.	Estimated Cost of Works.	Estimate of Extra Work sanctioned (if any.)	EXPENDITURE FOR THE YEAR.								Total Expenditure from the Commencement of Work.*	Quantity of Rock and Earth-work removed.	Length of Rivers and Main Conduits opened.	Length of Minor Drains opened.	Equivalent of Men's Labour in Day's-work of one Man.
						Preliminary Expenses.*	WORKS.					MISCELLANEOUS.						
							Labour.	Masonry.	Incidents and Materials used in the Works.	Implements, Machinery, and Tools.	Superintendence and Travelling Expenses.	Compensation for Damage.	Interest on Borrowed Money.*	Total.				
			A. R. P.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	Cubic Yds.	Stat. Miles.	Stat. Miles.	
Blackwater River	Meath and Kildare	5 June 1844	3,851 0 11	10,000 – –		314 8 –	1,663 1 2⅜	383 5 8½	226 8 –½	207 16 9½	126 13 4	673 12 –		3,600 5 1		98,247	5	—	28,035
Ardee, River Dee	Meath and Louth	June ..	3,240 1 33	8,388 9 –		265 2 11	2,729 3 6	117 1 10½	172 1 4	431 7 7½	94 8 6	8 – –		3,817 5 9		124,086	7½	—	42,456
				Total –		579 10 11	4,392 4 8½	500 7 7	398 9 4½	639 4 5	221 1 10	681 12 –		7,417 10 10		222,333	12½	—	70,491

* These Columns to be filled in the Accountant's department.

I certify this Account to be correct,

Dated this ____ day of _____ 184

Drainage Commission Office,

_____ Post Town.

_____ Clerk.

_____ District Engineer.

CIRCULAR to ENGINEERS.

Sir, Office of Public Works, Dublin, 24 July 1846.

I AM directed by the Commissioners of Drainage to inform you, that they will hold you accountable for the work done by your assistants, no matter by whom they may be recommended or appointed; and in cases where assistants are recommended by any member of the Board, you are not on that account to consider yourself bound to retain them if not found capable for filling the situations allotted to them, but in every such instance you are to report your opinion to the Board, and if necessary to suspend the employment of such assistant until you receive the Board's decision.

You are to continue to act on the first paragraph of the circular of the 13th of April 1846, in all cases, whether of works or preliminary surveys, on which you shall be engaged.

By Order,

Secretary.

(Circular.)

Sir, Office of Public Works, Dublin, 29 July 1846.

BEFORE commencing any works in the divisions or reaches into which you are to divide your districts, as directed by my circular of the 24th instant, you will be required to mark the same distinctly by red lines of division on your plans and sections, attaching to each such division one name, either of some remarkable townland, or other prominent feature in the division; which name is to be written in legible characters, both on the plans and sections, for the guidance of all persons employed under you.

Of this arrangement, you are to inform the Commissioners by letter, and a small diagram, plan and section, showing the division, and you are to adhere to this arrangement, and to such names in your accounts and correspondence.

In preparing your accounts for labour, &c., you are to take care that the accounts for each division be kept separate and distinct; that is, not to allow the accounts for two or more divisions to appear in one return.

I am directed by the Commissioners to send you the following list of items to be kept separate for each district in making the estimates and keeping the accounts, exclusive of those for county works, navigation, mill works, and for each reach of river, or division of district, viz.:—

1. Preliminary expenses.
2. Plant, tools and machinery.
3. Engineer's salary, establishment and allowances.
   Paymaster's salary and allowance.
4. Superintendence, overseers.
   (Not to include working overseers who should be charged to labour.)
5. Contingencies (including and describing such items as do not properly belong to any of the other heads of account.)
6. Compensation for damage or purchase of property.
7. Interest on borrowed money.

By Order,

JOS. C. WALKER, Secretary.

To

(Circular.)

DAMAGE to CROPS.

Office of Public Works, Custom-house, Dublin,

Sir, 27 August 1846.

WITH reference to the execution of works in the drainage districts under your charge, the Commissioners of Public Works desire that damage to crops should be avoided as much as possible, and, by suitable arrangements, it generally can be avoided in drainage works; but where unavoidable, the extent of damage should be ascertained and settled beforehand, either by agreement or by some person on the part of the land occupier, and some fair and competent person on the part of the proprietors of the district in which any such case of damage may occur, to be appointed or selected in case of difficulty by the Commissioners' district engineer. In case of difference, these two persons may call in a third, or, generally speaking, the district engineer himself will be able amicably to settle the matter. Upon the engineer's certificate of the amount of compensation, and party to whom due, the Commissioners will order the payment thereof. This question to be considered separately from damage to or purchase of land.

In the event of failure to agree or settle the amount in the manner above-mentioned, the parties must take the legal course directed by the Act.

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The Commissioners trust that you will make such arrangements as, during the execution of the works, will prevent any greater amount of flooding of lands or crops (whether as to duration of time or period of occurrence), than would occur before the works were commenced. At the same time, you and your officers should explain to all parties that it is impossible such works should be carried on without inconvenience, and even loss to the various parties concerned; nevertheless, that as the works are for their own benefit, and must be paid for by them in the end, the Commissioners hope that all parties will refrain from making claims for compensation (except in cases of peculiar loss), and will render their best assistance to their officers in carrying the works into execution, in order to economize the expenditure.

Any claims for final or absolute loss will be investigated at open court to be held for the purpose in the district, when the works are nearly completed.

I am, &c.

Jos. C. Walker, Secretary.

Circular as to Mills.

Sir, Office of Public Works, Dublin, 12 September 1846.

As during the ensuing winter it may be of great importance in several districts to retain in an effective state any mills that exist for the grinding of meal, the Commissioners of Public Works therefore direct that whenever you are empowered, in drainage and navigation cases, to remove mills, you will, in every case where it is compatible with the due and economical execution of the works, refrain from removing them during the coming winter.

I am, &c.

Jos. C. Walker, Secretary.

To

(Circular.)

Employment of the People.

Drainage and Navigation Works.

Sir, Office of Public Works, Dublin, 18 September 1846.

I am directed by the Board to instruct you, in executing drainage works during the present season of distress, arising from the failure of the potato crop, to have such arrangements made throughout your districts, with reference to the employment of the people, as will ensure a preference to those persons resident in each district who are in the greatest want; and that persons who, from your own inquiries, and those of the resident engineers and the overseers, shall be ascertained to be able to provide for themselves, shall not be employed as long as there are persons in the district in want, who are able and willing to work.

It is not intended in drainage works (which are to be executed within given estimates, and at the expense of private parties) to embarrass the engineer by any connexion with local relief committees, or any system of tickets for employment; but the Board direct that, as far as is possible and compatible with the due and economical execution of the works, their engineer shall make the works of drainage, navigation, &c., conducive to relieving the existing and anticipated distress.

With this view, the Board direct that, during the present autumn, such preparatory works, tap drains and other works, be completed, as will suffice, where practicable, for turning off the waters during the winter months, and allowing of the general progress of the works during winter and spring; and that new cuts and works in dry land be reserved, as far as practicable, for execution at that period.

It is also ordered that the name of the townland where each person employed on the works resides shall be entered in the overseer's and check clerk's books, in order that, at the end of the year, or whenever called upon, you may be prepared to furnish an account of the amount of employment furnished by the works in each district; and that you may also, upon communication with officers of the Board, employed in the management or execution of relief works under the recent Acts of Parliament, be enabled to point out those townlands and districts within the limits of your operation, to which the drainage will afford employment, and those to which it may be necessary to afford relief by other works.

By Order,

To the Engineers on Drainage Works.

Circular

CIRCULAR as to ENTRY on LANDS, &c.

Sir, Office of Public Works, Dublin, 18 September 1846.

I AM directed by the Board to send you herewith blank forms of three days' notice for entering on lands. When you require to make use of this form of notice, you are to send a copy for the signatures of the Commissioners, together with a tracing or brief description of the case, &c.

It is desirable that in all possible cases the entry be by consent, and the parties should fully understand that all claims for compensation will necessarily add to the expense of the works.

In all cases of adverse entry, the Commissioners, when serving the notice, must be prepared to make an offer of the requisite amount of compensation which in their opinion will be just, so as to entitle them to enter upon the lands after the expiration of the time specified in the notice; it will, therefore, be requisite for the engineer of the district to report what sum, in his opinion, will be just to offer, and to whom the offer should be made.

In all the drainage works heretofore carried on, the necessity for such proceedings has not arisen, in consequence of the parties feeling generally that the works were for their own benefit, and to be executed at their own expense. It is desirable to encourage this feeling as much as possible; and to show that those works are not to be deemed as Government works, but measures undertaken for the benefit and at the expense of the locality; and in case parties by refusing to allow the Board's officers to enter lands, mills, &c., retard the works, they should be informed of the responsibility they incur in preventing employment, and that the service of a three days' notice will empower the Board's officers to enter without further delay; so that no useful object will be obtained by resistance, as the Board are quite prepared either to agree equitably for any compensation to be paid, or to have it ascertained by a jury, according to the Act.

In case of any violence or resistance to the Board's officers, or people employed in the performance of their duty, the offenders are liable to be punished pursuant to the statute.

I am, &c.

Jos. C. WALKER, Secretary.

(Circular.)

Sir, Office of Public Works, Dublin, 28 September 1846.

WITH reference to your several drainage districts, the works of which are now being carried on under the provisions for summary proceedings of the Act 9 Vict. c. 4, the Commissioners of Public Works direct, that during the present year you will not expend a larger sum than will average 3*l.* per statute acre, on the flooded and injured lands comprised in the district.

I am, &c.

Jos. C. WALKER, Secretary.

BOARD OF PUBLIC WORKS.

NOTICE.

WHEREAS it has been reported to the Commissioners of Public Works, that certain persons engaged upon works of drainage have, upon some occasions, left the works without permission:

Notice is hereby given, that orders have been issued to the engineers in charge of the several works, not to permit such persons, so acting, to be employed again.

By Order,

Office of Public Works, Dublin, 29 September 1846. Jos. C. WALKER, Secretary.

Sir, Office of Public Works, Dublin, 2 October 1846.

I AM directed by the Commissioners of Public Works to acquaint you, that the Board are very much pressed in many quarters to allow of weekly payments in drainage works, as well as in those specially undertaken for purposes of relief.

In consequence of such applications, the Commissioners have directed preparations to be made for the issue of instructions and forms, whereby subsistence-money may be paid at the end of each week, and the total amount for task-work at the end of each fortnight; the receipts for both of which will be required on one document.

The Board direct, that in all districts where payments by the week are found necessary to meet the exigencies of the country, the engineers in charge, with their respective pay-

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masters, will consider and make whatever preparatory arrangements are requisite for carrying the system into effect when matured, and will report to the Board any suggestions which it may appear advisable to them to offer.

I am, &c.

Secretary.

Drainage Works, Acts 5 & 6 Vict. c. 89, and Amendments.

Instructions for Weekly Payments.

The destitution arising from the loss of the potato crop obliges the Commissioners, in conformity with urgent requests from the proprietors in various drainage districts in Ireland, to adopt, during the existence of destitution, the payment of the labourers and working overseers weekly.

The payment of the engineer's staff, paymasters, check-clerks and principal overseers is to be made, as at present, monthly.

To facilitate payment weekly, without interference with the system of task-work, and with the least possible additional expense or delay, the annexed forms of pay-sheets, estimates of remittances, paymaster's balance sheets and lists of pay-sheets and vouchers have been prepared; and the following instructions are to be observed:—

1. The system of measuring the work fortnightly and closing the accounts for task and labour is still to be preserved, but subsistence-money, at a rate not exceeding 10*d.* per day, or three-fourths the value of the task-work executed (observing the instructions on the annexed pay-sheet), is to be paid on a fixed day in each district or division of a district.

2. The district engineer, in concert with the district paymaster, is to fix, and report to the Board, a day in each week, for the payment of subsistence-money and balance of task-work in each district or division of a district. In making these arrangements, care is to be taken that no ordinary casualties shall prevent the paymaster being at the work or division on the day to be so fixed, and also that the said day shall be equally suitable for the payment of subsistence-money or the balance due for task-work. The arrangement must also be so made that the paymaster can most conveniently make his circuit of payments between Monday and Saturday, inclusive.

3. The payments are to be made on or very near the works, so that the men may not lose time or be taken away in large bodies from their occupation; for this purpose it will be desirable, in many cases where other facilities for doing so do not exist, that a wooden sentry-box or pay-office be provided. In no case is payment to be made in a public-house, hotel or shop.

4. The district engineer (or where no district engineer is appointed, the engineer in charge) is to forward to this office, on a fixed day in each week, an estimate for all the districts under his charge, of the amount to be remitted to the paymaster, for the payment either of subsistence-money, or balances due for task-work and labour, as the case may be. The day upon which this estimate is to be forwarded must be so fixed, that allowing sufficient time for communication to and from Dublin, and for one day's delay in Dublin, the remittances, whether in bank post bills or letters of credit, may arrive in time with the paymaster, to enable him to get the same cashed, and thus be provided with funds for the several payments to be made during the week.

5. The pay-sheets for each district or division, with the subsistence-money entered therein (in shillings, without fractions), and duly certified, are to be delivered by the engineer to the paymaster, wherever he may be, in sufficient time to enable him to make the payment at the place and time appointed for the purpose; and the engineer is to forward to this office in the Form B. 1, annexed, a list of the pay-sheets and their amounts so delivered to and received by the paymaster.

6. It is to be notified to all persons absent from the pay-table, at the time fixed, that they cannot be paid until the next pay-day.

7. The pay-sheets for the full fortnight's work or balances due, are to be forwarded in like manner by the engineer to the paymaster, and a list thereof furnished to this office.

8. The paymaster is responsible for paying the amounts certified to the proper parties, for which purpose, and for guarding against the payment of erroneous amounts, he is to take such due precautions as to him shall seem fit; postponing the payment of all disputed cases until those upon which no questions arise have been settled.

9. The engineer will be held directly responsible to the Commissioners for the perfect accuracy of these accounts, and any errors therein will be charged to him; the Commissioners at the same time giving him the power to charge those errors to any of the officers acting under him, in case the fault shall arise from and be traceable to them; and it is hereby directed, that every officer employed be informed of this responsibility. It will, therefore, be essential for the engineer to have the accounts, when received from the out-stations, most scrupulously audited and examined, both as regards the accuracy of calculations and the propriety of charges, whether as to number, quantity or prices.

10. The Commissioners are prepared to authorize any reasonable addition to the district office staff for carrying out this arrangement; but it is not anticipated that much, if any, addition shall be required in the out-stations, as the adoption of one sheet for the payment both

both of subsistence and balances simplifies the proceedings, and should add but little to the duty to be performed.

11. The paymaster is to return the pay-sheets, both for subsistence and balances, after payment of all persons present, to the engineer, who is to give him a receipt on a list thereof (see Form annexed, B. 2), specifying the amount of each pay-sheet, and the amount paid thereon, and for which it is to be deemed a voucher.

12. The paymaster is immediately to furnish the list so receipted by the engineer to this office, as his acquittance for the amounts paid, and under no circumstances is the paymaster to detain such receipted list, as, in the event of more than one week's list being due in this office, the paymaster will be held responsible by the Board for a breach of their orders.

13. The pay-sheets vouched for subsistence-money are to be returned to the engineer, to enable him to complete them for the balances due at the end of the fortnight; and the pay-sheets for the balances are to be returned to enable him to post accurately into his books the amount paid. This latter duty is to be performed without delay, and the vouched returns transmitted to this Office within one week after their receipt by the engineer.

14. In the event of the vouchers for more than one fortnight being outstanding without the express sanction of the Board in writing, the engineer will be held responsible by the Board for a breach of their orders.

15. These instructions are not to set aside any previously issued, excepting such as are at variance with them.

16. The engineers are to make such detail arrangements as will ensure these instructions being carried into effect, and especially that the payments shall occur regularly on the same day of the week at each place.

17. The payment for subsistence-money in drainage works by task is, as usual, to be made to the gang-leader (elected by the gang), in presence of one or two members of the gang.

18. It will be necessary, probably, for the engineer to increase the number of ordinary time-keepers at a low rate of pay, who shall keep accurately the time of the taskers, and thereby be enabled to see to the equitable division of the money amongst them.

19. It is to be distinctly explained and notified to the men employed, that the subsistence-money is merely a payment on account of labour or task-work, and not to be deemed as fixing any rate of daily wages.

By Order,

Jos. C. Walker, Secretary.

Circular as to Blasting Powder.

Office of Public Works, Custom-house, Dublin,
7 October 1846.

Sir,

I am directed by the Commissioners of Public Works to press upon your attention the necessity of making suitable arrangements for the safe-keeping of stores of Blasting Powder, previous to its being required for district works.

With reference thereto, the Commissioners direct that, previous to the arrival of supplies of powder, a fireproof magazine be constructed at your head quarters, and request that the greatest precaution be taken for its safe-keeping, and for the avoidance of accident.

I am, &c.

Jos. C. Walker, Secretary.

To each Drainage Engineer.

(Circular.)

Office of Public Works, Dublin,
9 October 1846.

Sir,

I am directed by the Commissioners of Public Works to direct that, during the present month, and as long as the weather will permit in the ensuing month, you should employ as many labourers in your several districts as practicable, having regard to the circular issued by the Board, as to the "Employment of the People."

For the present, it is felt to be necessary to make the drainage works available to the greatest possible extent, to relieve destitution, pending the completion of the arrangements for commencing relief works, under the Act 9 & 10 Vict. c. 107, and the arrival of the foreign grain, when it is hoped that these works may, in their progress, be restored to the ordinary and more economical course.

It is ordered, that care be taken throughout your various districts to have the number of men employed in all capacities, each day, most accurately ascertained, and the usual weekly lists furnished directly from the out-stations, so as to arrive with certainty at this office on each Monday morning.

It is to be distinctly understood, that this order to afford increased employment is not, under any circumstances, to justify the employment of the men by the day, or otherwise than

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than by task, and that any attempt to resist employment by task be firmly met; and if persevered in, the works should be stopped.

I am, &c.

Jos. C. Walker, Secretary.

To Engineers on Drainage Works.

(Circular.)

Mr. Commissioner Mulvany's Memorandum for District Engineers.

10 October 1846.

It is very desirable to know the number of men employed from each barony in Ireland on drainage works, to add or compare with the returns for relief works.

Is it practicable to do so? Either every week in their returns, by the overseer sending one of these sheets, for men of each barony employed under his direction.

The circular as to employment requires that the residence of each labourer should be ascertained, or if it cannot be done every week, could it be done every month? It is presumed that each overseer can readily ascertain how many of them under him belong to each barony.

W. T. Mulvany.

A copy of the above circular forwarded to each of the district engineers on drainage works, this date.

By Order,

Jos. C. Walker, Secretary.

(Circular.)

Office of Public Works, 14 October 1846.

The engineers are to keep up no establishment of artificers for the manufacture of barrows, or any other implement that can be procured in the local market.

As, however, no scale can be accurately laid down for the cost of repairs, it will generally be better to incur the expense of a paid daily establishment than risk the exorbitant demands of country artificers; besides, in smiths' repair by contract, more mischief would frequently be done by burning the iron than double the repairs are worth.

It may also be necessary to employ a skilled artificer for the purpose of making such implements as the ordinary mechanical skill of the country workman could not supply.

By Order,

Jos. C. Walker, Secretary.

(Circular.)

Calculations for Estimates.

Office of Public Works, Custom-house, Dublin,

Sir, 14 October 1846.

In the preparation of estimates for drainage works, the Board request that attention be paid to the following particulars:—

In order to ensure provision for the full quantity of material to be excavated in the formation or improvement of river-courses, streams and drains, it will be desirable in all cases (except those of large rivers or lakes, where the dimensions of the shoals can be accurately calculated) to make the calculations, in the first instance, for the formation of an entirely new channel or course of the required form and dimensions. These calculations for the new channel must be made with reference to the depth of cutting from the level of the surface of the adjacent land, to the proposed bottom of the new course; and, from the quantities thus ascertained, there is to be deducted only so much of the cubic contents of the present river, stream or drain, as will be distinctly available in the formation of the improved channel, taking care not to make too much allowance or deduction on this account.

It is also desirable that ample provision be made for the formation of main drains through the low grounds, so as effectually to drain places remote from the river-course or main channel of the district.

In the cases of marsh, moor, bog and cut-away bog lands, and in the case of small lakes proposed to be drained, when it becomes necessary to lower some outfall or barrier to effect the drainage, the Commissioners require that, in connexion with the levels, such borings or soundings

soundings be taken throughout the basins holding such marshes, bogs, lakes, &c., as will enable the engineer to ascertain the level of the lowest part of such basins, and the depth of bog or other substance therein, so as to determine accurately the depth to which the outfall or barrier should be cut, either with a view to the perfect drainage of the basin in question, or to making sufficient allowance for the subsidence which may be calculated to take place in the soil of such marshes, moors or bogs, after the drainage, and which in many instances is known to amount to one-fourth or one-third, or even more, of the depth of such soil.

By Order,

Jos. C. Walker, Secretary.

(Circular.)

Sir, Office of Public Works, 14 October 1846.

Pending the delivery of the stockof implements required for your district, it is the wish of the Board that you employ the poor on those works presented for, in which they can give useful labour, without the aid of wheelbarrows or wheeling-planks, such as on new roads, in the fencing, partial forming, in the quarrying and breaking of stones for metalling, and in the excavation for and building of gullets; also in the cutting down of hills, by employing a limited number of horses, a principle which the Commissioners regret being obliged to adopt, even for a limited period, as they would prefer the employment of manual labour. They conclude that you can employ a considerable number of the poor on these profitable works, and thus afford time for obtaining the necessary supply of implements, without wasteful hurry.

It is also directed that every exertion be used by the engineers and assistants to economize the use of implements.

The Board, wishing to encourage, as far as it is practicable, the manufacture of implements of wood and iron in the localities in which the works are situate, have ordered hand-bills to be printed and posted, and advertisements to be inserted in the Dublin and provincial newspapers, enumerating and describing the tools they wish to obtain, and the respective depôts in which they are to be deposited, for the use of the works in their vicinity. The Board are of opinion that they may gradually obtain a great portion of what will be required during the ensuing three months, and that thereby useful and remunerative employment may be afforded to the tradesmen and mechanics of your districts.

By Order,

Jos. C. Walker, Secretary.

Plant and Tools (and local Employment in Construction of same).

Circular to District Engineers.

Sir,

You are requested to take measures in time, for providing a sufficient stock of plant and tools for the execution of the works in your charge, during the ensuing spring and summer; and also to provide a store of such tools as may be required in other drainage works within your neighbourhood, which are likely to be undertaken next spring and summer.

It is the Board's desire, as far as practicable and consistent with economy, and the obtaining well-constructed and efficient tools, that you should procure them in the country; and it is conceived that, by taking care to be furnished with the most approved patterns from this office, and plans and specifications of the various kinds of tools required, you may gradually obtain a great portion of what will be required during the ensuing three months, and that thereby useful and remunerative employment may be afforded to the tradesmen and mechanics of your districts.

For this purpose, hand-bills describing the kind of tools required, and referring to patterns to be seen at your central store, and to specifications and drawings,* will be printed, and should be posted up in the various towns and villages within or near your districts. In these hand-bills it is to be stated that, if the necessary tools be not supplied within the times agreed upon, they will be obtained from Dublin, and thus the advantage of the employment which their manufacture would afford will be lost to the neighbourhood.

The

* *Note.*—Copies of the plans and specifications may be furnished to persons whose tenders are accepted.

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The delivery of the tools at the store should be made a condition of every agreement.

Any tools which are required for districts in which the works are in progress, or the final notice has been issued, are to be paid for out of the funds specially raised for such district.

Any tools required to keep up the stock, or as provisions for works in districts, where the final notices shall not have been issued, are to be paid for out of the funds provided by the 51 sec., 9 Vict., c. 4. The accounts of tools for each class of works must, therefore, be kept separate.

You are requested to furnish, without delay, a list and estimate of tools, &c., required for both purposes, in order that you may receive the Board's authority, either for the purchase of same, or for receiving them from central depôts to be established, and of which you will be duly apprized.

By Order,

Office of Public Works, Dublin,
15 October 1846.

Jos. C. Walker, Secretary.

(Circular.)

Sir, Office of Public Works, Dublin, 15 October 1846.

I am directed by the Board to instruct you, in all cases of breach of the peace, disturbance, riotous assemblage, intimidation meetings, threatening notices, combinations for increase of wages, or accidents, upon the works under your charge, to report the same to the Board without loss of time, so that the Board may not be left to receive the first accounts of such transactions from persons unconnected with the department.

For the purpose of ensuring compliance with this order, you are requested to direct all persons engaged under you, to report immediately to you such occurrences, and in cases of emergency, they are to transmit a duplicate of their report directly to this office.

It is the Board's desire, that without their sanction, the interference of police or military on the works be not called for by their engineers, except in very extreme cases, as it is desirable that persons employed under the Board be controlled by the Board's officers, and when this is found insufficient, that either the offenders be dismissed, or the works suspended or stopped.

By Order,

Jos. C. Walker, Secretary.

(Circular.)

20 October 1846.

By the Board's directions, I send you herewith printed advertisements (having reference to procuring a supply of implements for public works), and I am to request that you will have the same posted and circulated in your district accordingly. Those proposing must undertake to construct the implements according to the enclosed plans.

I am, &c.

Jos. C. Walker, Secretary.

Men employed.

Sir, Office of Public Works, Dublin, 24 October 1846.

The Forms of weekly return of men employed are to be filled and transmitted to this office (so as to arrive without fail every Monday) by your check clerks in all cases except where there are no such officers employed, in which case they are to be prepared by the overseers.

The columns for baronies are to be filled with the name of the barony in which each labourer resides.

By Order,

Jos. C. Walker, Secretary.

To Engineers on Drainage Works.

(Circular.)

Returns of Officers upon Works.

Sir, Office of Public Works, Dublin, 19 November 1846.

The Board direct, that you will send up a return (by return of post, if possible) of all officers engaged under your directions; viz. paymaster, assistant engineers, clerks, check clerks,

clerks, overseers, storekeepers and all other persons employed, who are not returned or accounted for in the labour amount of works, in the following form :

No.	District.	Name.	Capacity in which employed.	Date of Appointment.	Rate of Pay.	Allowance, if any.	Remarks.

The above Return will of course include your own salaries and allowances.

I am, &c.

(signed) Jos. C. Walker, Secretary.

To each Drainage Engineer.

(Circular.)

Drainage Relief.

Sir, Office of Public Works, Dublin, 8 December 1846.

I am directed by the Board to transmit, for your information, and that of your assistants, copies of the instructions issued for the information of parties reporting on drainage presentments, under Mr. Labouchere's Letter, with forms of Schedule and Specification annexed. —*See* Appendix, Nos. 1, 2 and 3.

I am, at the same time, to call your attention to the necessity, in all your drainage works, of providing for the effectual discharge of the maximum floods at as low a level as practicable (within reasonable limits of expense), so as to provide ample outfall for the future deep thorough drainage and improvement of such of the adjacent lands as require it.

For this purpose main drains should seldom, if ever, be under five feet deep; small streams and rivulets from six to seven feet, and larger streams and rivers from eight to nine feet, or more, according to the size of the river, with narrow bottoms and side slopes, such as have been so frequently referred to by Mr. Commissioner Mulvany in his communications with the engineers.

By adopting this system it will be found, both on calculation and in practice, as has been already experienced, that much less land will be wasted, the discharge will be more effectual, and the scouring power on the bottom so improved as to prevent accumulations, and, in a great measure, to save expense in future maintenance.

By Order,

Secretary.

To the Engineer on Drainage Works.

(Appendix, No. 1.)

Instructions to be observed in making Preliminary Examinations, and Reports on Presentments, for Main or Open and Thorough Drainage and Sub-soiling of Land, under the Provisions of the Poor Employment Act, 9 & 10 Vict. c. 107, as explained by Mr. Labouchere's Letter of the 5th October 1846.

I. It is essential that each officer of the Board employed in this service should make himself thoroughly acquainted with the general provisions of the Poor Employment Act, Mr. Labouchere's Letter, and the Instructions issued by the Board with reference to that letter, on the 10th of October last, and particularly those issued on the 4th November instant, together with the Forms and Undertaking referred to therein, and those portions of the General Drainage Acts which define the term "Proprietor." (*See* the Undertaking referred to, No. 4.) Upon a thorough understanding of those documents will depend, in a great measure, his capability to judge accurately, and report upon the propriety of recommending the works presented for.

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II. The leading object of the inquiry is to ascertain the sufficiency of the security which the lands to be drained or improved by drainage afford for the money presented, or so much thereof as it may be right to recommend to be so expended.

This part of the inquiry will be twofold; viz., as to compliance with the required formalities; and, secondly, as to the extent, nature and results of the works proposed.

As to Compliance with Formalities.

1. It will be desirable to see that presentments have been made in accordance with the instructions of the 4th November, in order that any irregularity or mistake in the apportionment on Electoral Divisions may, if practicable, be remedied by the Board's recommending only such expenditure within the limits of the presentments made, as will be in proportion to the Poor-law valuation of those divisions.

2. Ascertain before recommending any work, or portion of a work presented for, that the necessary "undertaking" has been given by each, or (where more than one) by all the proprietors whose lands are proposed to be drained or improved by the work recommended, and that in such "undertaking" all such lands are duly named.

3. Ascertain, from local inquiries, whether the person who has signed the "undertaking" is the reputed "proprietor," within the meaning of the Drainage Acts (*see* Schedule on back of Undertaking),* of the lands in respect of which he has signed. In cases of doubt, calling upon the "proprietor," or his agent, to give in writing a brief statement of the nature of the title by which he is constituted such proprietor.

As to the Extent, Nature and Results of the Works proposed.

1. Visit the lands named in each presentment in which the formalities have been complied with; and if it shall appear, upon a cursory examination, that the work, or any portion of it, can be recommended as calculated to effect an improvement commensurate with the expenditure, mark on the engraved Ordnance townland sheets the extent of the land to be drained or benefited by the proposed work, whether of main, open or thorough drainage or sub-soiling, and colour same with a dark blue tint in case of main drainage, and light blue tint in case of thorough drainage or sub-soiling, distinguishing at the same time the adjacent boundaries of the properties of which the lands form a part with a yellow edging of colour, and numbering each separate lot distinctly.

2. Ascertain in an approximate way the present fair letting value (say on a lease for 21 years without fine), of the land proposed to be drained and benefited, and the fair increase in such letting value which may reasonably be expected to arise from the proposed works.

3. Calculate from the Ordnance survey sheets, with the aid of a horn scale, or otherwise expeditiously, the area of the lots so marked out and proposed to be drained or benefited.

4. Make a sufficiently full estimate of the cost of the works which are recommended for the drainage and improvement of the lands in question, on the assumption that the works are to be executed by task, by labourers supplied from the lists of relief committees, and that the working overseers, check and pay clerks of the barony are to be charged rateably on the works in the barony.

5. If upon a consideration of the information thus obtained, it is found that the lands to be drained and benefited are in their present state (or will be by the mere operation of the drainage works alone, without reference to any further expenditure in reclamation or cultivation), good and sufficient security for the repayment of the expenditure, with interest at 3½ per cent., within a maximum period of 10 years, then the proposed work, to an extent in no case exceeding the presentment, may be recommended.

6. The particulars ascertained in all such inquiries are to be entered in the printed tabular form of Report (No. 2), furnished for this purpose; the details being duly entered in ink, in a field or note book, to be lodged in this office with the documents of the barony.

7. As works of drainage are in progress, or have been decided upon, for various districts in Ireland, under the provisions of the General Drainage and Million Acts, to avoid confusion, great care must be taken not to recommend works for the drainage of any land already under the operation of these Acts, or which having been applied for, or included in any district applied for, are proposed to be drained or improved under the operation of these Acts.

III. The second object of the inquiry (after having determined all matters affecting the security, and forwarded the General Report to the Board) will be to devise and lay down the

* Attend particularly to the last paragraph of this Schedule.

the details of the proposed works and best system of drainage, where suitable plans, specifications and estimates shall not have been furnished by the proprietors themselves, which, to avoid delay, they should be advised to provide in every instance.

1. In the preliminary examination it will be desirable, as far as practicable and consistent with the diffusion of employment, to select for recommendation the most useful works, forming one complete measure within the limits of the townlands named in the presentment and "undertaking."

2. The line and general direction of the proposed works should be represented upon the Ordnance sheet by neat red lines, and the direction of the fall and water shed line indicated by arrows and dotted lines. A Specification (printed Forms are proposed to be prepared—No. 3) of the works should be made, showing the dimensions, form and inclination of the proposed drains and other works, the distance apart between the frequent drains, arrangement of main and sub-main drains, proposed mode of formation, and other particulars which the local circumstances of each case render necessary to be specified, for the guidance of the persons appointed to execute the works; an estimate for each separate work or lot is also to be prepared and annexed to the specification.

3. In cases where tiles, pipes or other artificial materials are proposed to be used in thorough drainage, the facilities for procuring the same in the locality should be reported upon.

4. Any sub-soiling proposed to be effected under the Poor Employment Act and Mr. Labouchere's Letter is to be executed by manual labour, and is to be considered accordingly in making any arrangements or estimates on the subject.

5. In making out the extent of land to be drained, and generally in making the investigation and inquiry herein directed, the officer appointed to report should take care to have with him some competent person or persons (either the overseer who is to execute the works, or some intelligent person acquainted with the locality), whom he should instruct as regards the limit of the lands, general direction of the drains, and other particulars, in order that he or they may point out the same when the works are about to be executed.

6. The officer appointed to report on the presentments is to furnish with as little delay as possible the Ordnance plans, specifications, estimates, field books and other documents connected with a barony (when prepared in accordance with those instructions) in one parcel to the Board, or, when so ordered, to the principal local officer charged with the execution of the works, by whom they are to be carefully preserved and transmitted to the Board, when he shall have taken such copies as may be necessary for his guidance in the execution of the works.

By order of the Commissioners,

Jos. C. Walker, Secretary.

Office of Public Works, Dublin,
24 November 1846.

Note.—The name of the Electoral Division should be written here, or across the Form.

(Appendix, No. 2.)

Poor Employment. Mr. Labouchere's Letter. Act 9 & 10 Vict. c. 107

Drainage Presentments.

Presentments.		Names of Townlands included in Presentments in which Works are recommended to be executed.	Report of Officer, whether recommending wholly or in part, Name of Proprietor of Lands, and whether the necessary Undertaking has been furnished.	MAIN OPEN DRAINS.					THOROUGH OR COVERED DRAINAGE.				Total Estimated Expense.	Observations.
No. of Presentment.	Amount Presented.			Number of Lineal Yards of Main Open Drains to be made or deepened.	Estimated Quantity of Land to be drained or improved, as shown in Ordnance Sheet.	Proposed Size and Depth of Main Drains and Fall per Mile.	Average Estimated Letting Value per Acre. At present.	Average Estimated Letting Value per Acre. When drained.	Estimated Expense.	Estimated Quantity of Land to be drained or improved as shown on Ordnance Map.	Proposed mode of Drainage, whether with Stones, Pipes, Tiles, &c. &c., Nature of Subsoil, Subsoiling when necessary.	Average Estimated Letting Value per Acre. At present.	Average Estimated Letting Value per Acre. When drained.	Estimated Expense.	
									£. s. d.					£. s. d.		

(Appendix, No. 3.)

Appendix D.

SPECIFICATION for thorough DRAINAGE (with Broken Stones).

Barony of . County of . Lands of .

GENERAL OBSERVATIONS.

No drainage works shall be undertaken until it has been clearly ascertained that the surface level of the maximum floods in the main drain can be discharged at a level that will admit of the sub-main drains venting the waters from the most remote point of the lands proposed to be thorough drained, at a level at least four feet below the surface of such land. In other words, that the highest floods shall be at least four feet below the lowest point of the land.

Open Main Drains.

The deepening and improvement of the main drain is to be commenced at the point marked upon the accompanying map, and from thence a gradient carried up, having an inclination of at least feet per statute mile, and sunk to a depth that will admit of the above stipulations as to the discharge of the sub-main drains being carried out. The drain shall be wide at bottom, and the side slopes shall average at least one to one, unless in rock cutting, when the side slopes may be diminished to six inches in a foot. All sharp angles, projecting stones, and other impediments to the free discharge of the waters must be completely removed.

The spoil or material raised in sinking and improving the drain, where not available for top dressing the adjoining lands, or for filling up useless holes or drains, must be removed to a distance of at least six feet from the edge of the main drain, and dressed off in a workmanlike manner.

The abutments of those bridges which have sufficient breadth of water-way shall, if necessary, be carefully underpinned; and those bridges which are insufficient to discharge floods should be taken down and rebuilt of suitable dimensions.

Covered Main Drains.

Whenever, from the nature of the lands, the extent of the district under drainage, and the quantity of water to be voided, it may be necessary to form leading channels to receive the water discharged from the sub-main, the covered main drain shall be adopted. Their dimensions must be proportional to the amount of water to be voided, well flagged or paved at bottom, the sides built of stone or brick, and covered with a flag or arch at top; an opening of one foot square, with a fall of feet per statute mile, may generally be considered sufficient to void the rain water from acres of land.

Sub-Mains.

The sub-mains to be cut inches deep, at least inches wide at top, and inches wide at bottom. The fall in each sub-main to be as great as the above described main drainage of the district will allow. No sub-main to be allowed to run beyond a length of yards, without discharging itself into a covered or open main drain.

The Frequent Drains.

The drains to be cut inches deep, inches wide at top, inches wide at bottom; to be run in a straight direction parallel to each other, directly up and down the declivity (when possible), and at a distance of feet asunder. The fall in each frequent drain to be as great as the main drainage and sub-main drainage, previously described, will admit.

Filling-in.

All the drains (or a large number of them) having been opened and inspected, and it being seen that they are cut in a workmanlike manner, and that no water is standing in any of them, the filling-in may be commenced.

The Frequent Drains.

Into each frequent drain shall be put inches of broken stones in depth, the stones having been broken to a size not exceeding 2½ inches in diameter. Great care should be taken that the bottom of the drain be clean, and that no clay or dirt be put in along with the stones; a sod (or clay, as may be convenient) inches thick, shall be placed carefully on top, and the whole tramped upon, or rammed hard. The drain should then be filled up with the stuff previously shovelled out, observing to keep the active soil for covering the top. The putting in of the stones shall invariably be commenced at the highest part or head of the drain.

Appendix D.

Filling-in Sub-Mains.

Into each sub-main there should be put inches of broken stones in depth, or a covered pipe-drain should be formed if the water be very considerable, and the filling-in completed as above described.

Certain General Rules to be observed in thorough Drainage.

1st. At the top of each field to be thorough drained, a drain should be cut parallel to the fence, and running at a distance from it equal to one half the distance between each of the frequent drains, into one or more of which it shall discharge itself. The remaining heads of the frequent drains to be commenced at a distance from this drain equal to the entire distance between each of the frequent drains.

2d. All frequent drains to discharge themselves into a sub-main, which should be opened nine or ten feet from the fence at lowest side of field.

3d. If natural hollows occur in fields, sub-mains must be directed into each of them, so as to carry off the water from the frequent drains.

4th. No open drain should be allowed to run into a closed one.

(Appendix, No. 4.)

Poor Employment Act, 9 & 10 Vict. c. 107.

Barony of , County of , Undertaking of , Proprietor, .

For Drainage.

Whereas at an Extraordinary Presentment Sessions, held at in the county of , in and for the barony of , in said county, in pursuance of an Act passed in the 9th & 10th years of the reign of Her present Majesty, intituled, "An Act to facilitate the Employment of the Labouring Poor, for a limited period, in the distressed Districts in Ireland," application was made by me for a presentment for the sum of

9 & 10 Vict., c. 107.

to be expended in the draining(*a*) of certain lands, containing in the whole acres, or thereabouts, within the following townlands; that is to say,(*b*) in the electoral division of , in the said barony of , and county of , of which said lands I am proprietor,(*c*) within the terms of an Act passed in the 5th & 6th years of Her present Majesty, intituled, "An Act to promote the Drainage of Lands and Improvement of Navigation and Water Power in connexion with such Drainage in Ireland;" and two other Acts since passed, amending the same, and which presentment was accordingly made pursuant to such my application:

(*a*) If subsoiling be required, add as follows:—"and subsoiling as far as same is connected with drainage."

(*b*) Insert the townlands.

(*c*) See definition of Proprietors, below.

Now I , of , in the county of , being such proprietor of the aforesaid lands, so being within the said townlands, do hereby undertake and agree that the money so presented, or so much thereof as shall, by an award to be made by the Commissioners of Public Works in Ireland, or any two of them, appear to have been expended on said lands, shall, with interest thereon, at the rate of 3½ per cent. per annum, be a charge on said lands exclusively, and shall and may be levied out of same exclusively.

In witness whereof, I have hereunto set my hand, this day of 184 .

Name of Proprietor.
Residence.
Post Town.

Present when signed by the said

Persons having any of the following Interests, are qualified as Proprietors to give the Undertaking.

Act 5 & 6 Vict. c. 89, sect. 23, 25, 26, 149.

Persons seised of or entitled in possession as tenant in fee-simple, or in fee-tail, general or special; or as tenant by courtesy.

Persons entitled under any will or settlement, deed or instrument (except a grant, lease or agreement in writing for such grant or lease, reserving rent), for his own life, or that of any other persons; or for years determinable on such lives.

Persons entitled under leases granted by a bishop, collegiate or ecclesiastical body; or any person having immediate or derivative title from or under same, which lease shall contain a *toties quoties* covenant of renewal.

Persons

Persons entitled under any grant or lease for an estate in fee; or for a term of years absolute, whereof 40 or more years are unexpired; or for any life or lives renewable for ever; or for any term of years renewable for ever; whether such last-mentioned persons shall be entitled absolutely or as tenant in tail, or as *quasi* tenant in tail, or for his life.

Persons who are feoffees or trustees of such land, or any such estate or interest therein aforesaid, for charitable or other purposes, or guardians of infants; husbands of feme coverts; committees of estates of idiots or lunatics; provided all such persons obtain the sanction of the Court of Chancery before giving such undertaking.

In cases where several persons shall have in any portion of land such of the aforesaid estates or interests as would entitle them to be deemed proprietors, such of them shall be deemed proprietors as shall be in actual occupation of the land, or shall have such estate or interest next in reversion or remainder to the estate or interest of the person in actual occupation.

(Circular.)

RELIEF DEPARTMENT.

Board of Public Works,
9th day of December 1846.

THE employment of the destitute on roads and other public works must soon terminate, and reproductive works be substituted for them. To render such works really beneficial and morally useful, the landed proprietors must join hand in hand with the Board of Works. Every proprietor or farmer will be interested in the practical success of some local work; and as the number will be great, the success will be in proportion to the zealous co-operation which the Board may receive.

Works connected with thorough draining and sub-soiling with the spade, must be executed systematically, and calmly—no external force, no hurry, can be admitted. The number of labourers required for each particular work can be accurately known, and each individual labourer should have a task allotted to him, say, sufficient for a fortnight or three weeks.

To enable each labourer to till his own farm, or that of a neighbouring farmer, and at the same time earn the support of his family through employment on drainage works, it is proposed that the task to be allotted to each labourer should consist of a certain length of drain, and the collection and breaking of stones for the drain; where the stones are to be gathered from the same or neighbouring fields, the children of the labourer may be employed by him in collecting them into heaps, and, if sufficiently near, depositing them on the side of the drain cut by the father.

If, with the assistance of his children, the task, sufficient for a fortnight, be completed in six or eight days, the labourer will receive his money and be at liberty to devote the remainder of the fortnight to farm labour, and still will have earned sufficient to support his family until the time arrives for commencing a second task, and so on.

To render the drainage works substantially beneficial to the landed proprietors, it is necessary that the most approved system of thorough draining should be adopted. To effect this object, the Commissioners of Public Works mean to appoint district inspectors of drainage, whose duty will be, in the first instance, to examine the site of every work presented for; to determine the extent of land to be drained, and mark its boundaries on the Ordnance plans; to lay out the works connected with the main or open drains; to determine the depth and all the detail belonging to the covered drains; to estimate the cost of the drainage per acre; to value the land in its present state, and give his opinion as to the increased value which will result from the drainage; and report on the whole to the Commissioners.

During the time occupied by the inspector of drainage in the performance of this duty, the landed proprietor, the agent, or steward, should attend for the purpose of receiving instructions as to the particular works to be executed in each case, and should recommend suitable persons who may be employed as local overseers to carry them out.

The stewards or farmers, as the case may be, to act without salary; but the local overseers recommended by them, when approved of by the inspector of drainage, will be paid according to their qualifications and exertions.

The sanction of the Treasury having been received for the drainage works of any district, and the number of labourers to be employed in each determined, on due notice being given to the relief inspecting officer of the Board of Works, he will name labourers for each from the list of the destitute residing within the electoral division or barony, as is usual for the road works; and it is expected that the landed proprietors, farmers and stewards connected with each work will use every exertion to scrutinize the list of the destitute, to ensure that none who have other means of support be employed. The land will be assessed for the expenditure, and consequently the admission of persons not requiring relief, by adding to the number, will proportionably increase the assessment; hence it becomes the interest, as well as the duty, of all cess-payers to limit the admission of labourers to those who are wholly destitute.

By Order,

JOS. C. WALKER, Secretary.

Appendix D.

(Circular.)

DRAINAGE.—SECOND ASSENT.

Provisions for Summary Proceedings, 9 Vict. c. 4.

Office of Public Works,
Dublin, of 184

District.

Act 9 Vict. c. 4.

THE Commissioners of Public Works having commenced and carried on works in this district, under the "Provisions for Summary Proceedings," in the Act of 9 Vict. c. 4, and having expended on such works an amount equal to a sum calculated at the average rate of 3*l.* for every statute acre of the lands to be drained or improved within the district, and it being, in the opinion of the Commissioners, necessary for the drainage and improvement of the said lands, that the works for that purpose should be further continued, executed and completed, according to the report heretofore made, as to this district, to the said Commissioners; I am, therefore, directed to inform you that such works cannot be further proceeded with unless the assents of the proprietors for more than half the extent of lands to be drained be furnished to the Commissioners, pursuant to the 50th section of said Act; and to expedite the proceedings, it is desirable the assents should be furnished without delay.

Printed forms of assent are furnished, and may also be had on application at this office.

I am, &c.
Jos. C. WALKER, Secretary.

(Circular.)

DRAINAGE ACCOUNTS.

Office of Public Works, Dublin,
Sir, 21st January 1847.

THE Board direct me to send you a copy of the ledger and journal accounts for drainage filled in the mode in which the Board require them to be kept.

I am to inform you, that a separate ledger account is to be opened for each district under your charge.

That in each such ledger a separate account must be opened for the following heads (or as many of them as each case requires), in the following order:—

1. General Project,—Abstract Account:—
   This is to contain an abstract of all the other ledger accounts in the district, in a brief form; to be posted up monthly, and show at a single inspection the total expenditure and total estimates for the district.

2. The General Project,—Contingent Account:—
   Plant and tools, incidents, superintendence, engineer's establishment, compensation, and other general heads of account not coming under any other of the heads of account herein enumerated, to be entered under this item, and to be credited by the amounts in the estimates for such objects.

3. General Project,—County Works Account:—
   To include all expenditure for county works, and the estimates therefor.

4. General Project,—Mills Account:—
   In cases where mills are altered, or works done thereat, this account to be opened.

5. General Project,—Navigation Account:—
   To be opened in any cases where expenditure is incurred under the provisions of the Acts for navigation in connexion with drainage. The Act specially directs this account to be kept separate.

6, 7, &c. Division Accounts:—
   A separate account to be opened for each division of the district, as ordered by Circular, dated 29th July 1846.

The journal or day book is to be posted immediately after the payments for each fortnight, or other fixed period, are made, and is to be a true registry of the abstract of each pay-sheet under the different heads in which the statistical abstract is, by former circulars, required to be kept. Such abstract to be made in red ink upon the face of each pay-sheet.

The accompanying examples, it is anticipated, will be found sufficient, with the printed forms, for the guidance of each engineer and accountant.

This circular is not to be deemed as altering any other heretofore issued on the subject of accounts.

If the accounts have not been kept in the manner herein pointed out, and specially required by the substance of former circulars, particularly that of 25th July 1846, the Commissioners direct that immediate steps be taken by the district engineers to have them properly posted into these forms.

The

The Commissioners cannot too strongly or repeatedly urge on the district engineers in charge of districts the importance and absolute necessity for having these accounts kept in the most clear and intelligible form, not only for their own guidance, but for the information of the parties who are to repay the expenditure made by them.

Upon the strict accuracy and clearness of the accounts alone can the engineer, in measures conducted as those of drainage are, rely for the defence of his character and the justification of his proceedings, and those of the Board under whom he is acting.

Under all these circumstances, the Board rely with confidence upon your using every exertion to have their instructions on this subject carried fully into effect.

By Order,

To the District and other Engineers in charge of Drainage Works.

Jos. C. Walker, Secretary.

Instructions for the Information of Parties reporting on Drainage, under the Acts 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; and 9 Vict. c. 4.

Sir, Office of Public Works, Dublin.

I am directed by the Board to transmit for your information, and that of your assistants, copies of the instructions issued for the information of parties reporting on drainage under the Acts.

I am, at the same time, to call your attention to the necessity, in all your drainage works, of providing for the effectual discharge of the maximum floods at as low a level as practicable (within reasonable limits of expense), so as to provide ample out-fall for the future deep thorough drainage and improvement of such of the adjacent lands as require it.

For this purpose main drains should seldom, if ever, be under five feet deep. Small streams and rivulets from six to seven feet, and larger streams and rivers from eight to nine feet, or more, according to the size of the river, with narrow bottoms and side slopes, such as have been so frequently referred to by the Commissioners in their communications with the engineers.

By adopting this system, it will be found both on calculation and in practice, that much less land will be wasted, the discharge will be more effectual, and the scouring power on the bottom so improved as to prevent accumulations, and in a great measure to save expense in future maintenance.

By Order,

Jos. C. Walker, Secretary.

Instructions.—River Drainage.

Permanent Bench Marks.

In making surveys of drainage districts, it is most important, both as regards the success of the works to be executed and the avoidance of error, that numerous and suitable permanent bench marks be left in all surveys, even those of the most cursory nature, made for drainage purposes, so that any levels whatever, which are taken, may be afterwards available by being made with reference to some fixed standard. These standard bench marks should, in each case, be placed near the site where the levels are taken, and in such a position as to secure, on any future occasion, an easy reference to them, by any engineer or surveyor sent either to complete the levels and survey, or execute the works, or make any observations which the nature of the case may require.

For this object it is ordered by the Board that the site and description of all such bench marks be accurately entered in the field levelling books, illustrated by a sketch plan, and also indicated on the Ordnance townland sheets of the district. A descriptive list of the permanent main bench marks, with their registered height above the datum of the district, either as cursorily or permanently ascertained, is also to be made out, and kept with the original and working plans for each district.

These bench marks should never be very remote from each other, except in the case of lakes or long level reaches of deep rivers, and one should be placed immediately at the site of each important work or part of a work, and wherever obstructions exist in the present stream or river-courses.

Appendix D.

The bench marks should be generally made above the level of floods, and upon objects least likely to be disturbed or removed, such as the abutments of bridges, stone cills of doors, copings of locks, tops of rocks, and other such places easily approached; and the particular spot, adopted for a bench mark, should be marked by a cut or punched triangle, or circle around it: the highest point of the particular spot being adopted as the site upon which the levelling staff is held.

In many cases the soffit of the key-stones of bridges have been selected by engineers; but they seem unsuitable for the purpose, from the difficulty of holding the staff correctly to such places.

In order to ensure the fulfilment of these instructions, the Board direct that each surveying party shall provide a suitable small mallet and well-steeled punches, or hammer, with sharp pick head, and other suitable tools, to mark the sites of the bench marks.

The district and other engineers in charge, are directed to take particular care to ascertain that these instructions are complied with, and in cases of neglect they are to make such disallowances from the accounts for payment, as will be sufficient to defray the expense of having such omissions rectified, and shall also report the circumstance to the Board.

Calculations for Estimates.

In the preparation of estimates for drainage works, attention must be paid to the following particulars:—

In order to ensure provision for the full quantity of material to be excavated in the formation or improvement of river-courses, streams and drains, it will be desirable in all cases (except those of large rivers or lakes, where the dimensions of the shoals can be accurately calculated), to make the calculations, in the first instance, for the formation of an entirely new channel or course of the required form and dimensions. These calculations for the new channel must be made with reference to the depth of cutting from the level of the surface of the adjacent land, to the proposed bottom of the new course; and, from the quantities thus ascertained, there is to be deducted only so much of the cubic contents of the present river, stream or drain, as will be distinctly available in the formation of the improved channel.

It is also desirable, that ample provision be made for the formation of main drains through the low grounds, so as effectually to drain places remote from the river-course or main channel of the district.

In the cases of marsh, moor, bog and cut-away bog lands, and in the case of small lakes proposed to be drained, when it becomes necessary to lower some outfall or barrier to effect the drainage, the Commissioners require that, in connexion with the levels, such borings or soundings be taken throughout the basins occupied by such marshes, bogs, lakes, &c., as will enable the engineer to ascertain the level of the lowest part of such basins, and the depth of bog or other substance therein, so as to determine accurately the depth to which the outfall or barrier should be cut, either with a view to the perfect drainage of the basin in question, or to making sufficient allowance for the subsidence which may be calculated to take place in the soil of such marshes, moors or bogs, after the drainage, and which, in many instances, is known to amount to one-fourth or one-third, or even more of the depth of such soil.

Form of Estimate for River Drainage. Appendix D.

Quantity.	Description of Work.	Rate.	£. s. d.
—	Cubic yards excavation, in clay and gravel, at -		
—	Cubic yards excavation in rock, at - - -		
—	Lineal perches (statute) scouring of drains averaging cubic yards, per perch, at - -		
—	Cubic yards filling in embankment, at - -		
—	Cubic yards puddle, at - - - - -		
—	Square yards of stone paving inches thick, at -		
—	Cubic yards of masonry in sluices, at - - -		
—	Sluice valves, ft. in. × ft. in., wood or iron, at -		
—	Cubic yards rubble masonry in piers, wing walls, abutments, at - - - - - -		
—	Cubic feet of sheeting in arches, at - - -		
—	Cubic yards of masonry in culverts, at - -		
—	Cubic yards masonry in mill weir, at - - -		
—	Cubic feet capping stones, at - - - -		
—	Lowering mill-wheel and machinery, at - -		
	Compensation for acres of lands - - -		
	Compensation for mills - - - - -		
	Compensation for fisheries - - - -		
	Superintendence, contingencies, per cent. - -		
	Preliminary survey, final valuation, cost of bringing Acts into operation - - - - -		
	Interest on borrowed monies at per cent., assuming years for completion of works - -		
	Amount chargeable to Proprietors -		
	Work chargeable to County.		
—	Cubic yards of masonry in bridges feet span, at		
—	Cubic yards underpinning bridges, at - -		
	Superintendence, contingencies, per cent. - -		
	Interest on borrowed monies, per cent. - -		
	Amount chargeable to County -		
	Total Cost of Works - £.		

Abstract of Estimate.	£. s. d.
Excavation in river-course - - - - - - - - - -	
Excavation in clearing and scouring drains - - - - - - -	
Filling in embankment - - - - - - - - - -	
Puddle and pitching to embankment - - - - - - - -	
Masonry in bridges, mill-weirs, &c. - - - - - - - -	
Alteration of mills, machinery, &c. - - - - - - - -	
Compensation - - - - - - - - - - -	
Superintendence, contingencies - - - - - - - - -	
Preliminary survey, final valuation, expense of bringing Acts into operation	
Interest on borrowed monies - - - - - - - - - -	
Amount chargeable to Proprietors -	
Work chargeable to County.	
Excavation for bridges - - - - - - - - - - -	
Masonry in bridges - - - - - - - - - - -	
Superintendence, &c. - - - - - - - - - - -	
Interest on borrowed money - - - - - - - - - -	
Amount chargeable to County - -	
Total Cost of Works - £.	

Appendix D.

PERSONS having any of the following Interests are qualified as Proprietors to give their Assent in writing. Act 5 & 6 Vict. c. 89, Sect. 23, 25, 26, 149.

Persons seised of, or entitled in possession, as tenant in fee-simple, or in fee-tail, general or special; or as tenant by courtesy.

Persons entitled under any will or settlement, deed or instrument (except a grant, lease, or agreement in writing for such grant or lease, reserving rent), for his own life, or that of any other persons; or for years determinable on such lives.

Persons entitled under leases granted by a bishop, collegiate, or ecclesiastical body; or any person having immediate or derivative title from or under same, which lease shall contain a *toties quoties* covenant of renewal, and also all bishops, parsons, and other ecclesiastical persons as to lands held by them in those respective characters.

Persons entitled under any grant or lease, for an estate in fee; or for a term of years absolute, whereof 40 or more years are unexpired; or for any life or lives renewable for ever; or for any term of years renewable for ever.

Whether such last-mentioned persons shall be entitled absolutely, or as tenant in tail, or as *quasi* tenant in tail, or for his life.

Persons who are feoffees, or trustees of such land, or any such estate or interest therein aforesaid, for charitable or other purposes, or guardians of infants; husbands of feme coverts; committees of estates of idiots or lunatics; provided all such persons obtain the sanction of the Court of Chancery before giving such undertaking.

In cases where several persons shall have in any portion of land such of the aforesaid estates or interests as would entitle them to be deemed proprietors, such of them shall be deemed proprietors as shall be in actual occupation of the land, or shall have such estate or interest next in reversion or remainder to the estate or interest of the person in actual occupation.

PERSONS having any of the following Interests are qualified as occupying Tenants to give validity to the Assent of the Proprietor, by giving their Consent in writing.

Persons in actual occupation under any grant, lease or agreement in writing for a lease, for a life or lives, or for a term of years whereof more than fourteen shall be unexpired.

By Order,

12 February 1847. J. C. WALKER.

(Circular.)

Sir, 10 March 1847.

THE Commissioners desire that such preparations shall be made by you, and any assistants employed under you, that all drainage works in your charge may be set on at as early a period as the weather will permit, and followed up with rigour, so as to afford as much employment as possible.

In furtherance of this object, all surveys and reports now in progress of being made, should be pushed on as speedily as circumstances will admit.

In cases where additional assistants and overseers may be required, you are to state the number of each, the name of the district for which they will be required, and the names of the parties whom you would recommend for these situations. A careful examination of the implements now in use when the works are being carried on, is to be made with a view to their being put in proper and efficient order, if necessary, and a list to be submitted to the Board, showing the number or quantity of such new implements as may be required, distinguishing those required for new districts, from those required for the districts now in operation.

I am, &c.

(signed) J. C. WALKER, Sec.

(Circular.)

Sir, 12 May 1847.

THE Board request you will state, by return of post (if possible) what amounts you will probably expend on each district under your charge, between this time and the 1st of October 1847, and between that time and the 1st of April 1848.

By Order,

(signed) J. C. WALKER, Sec.

(Circular.)

(Circular.)

Sir, 14 May 1847.

The Board direct you in future, when preparing reports on drainage districts, to state the probable time the works will require to be completed, and the average number of men per day that can be employed thereon.

By Order,
(signed) J. C. Walker, Sec.

(Circular E.)

Sir, 16 June 1847.

The Board direct that in making out estimates in detail for drainage works, in future you are to divide the river into suitable reaches, to give an estimate in detail for each reach.

I am, &c.
(signed) J. C. Walker, Sec.

(Circular.)

Sir, 19 June 1847.

Referring to the Board's orders of the 5th instant to suspend works, and not to employ any more labourers in districts under your charge, I am desired to explain that the cause of that order is want of the requisite funds, and that unless the Board receive money, in reply to their advertisements for loans at 5 *l.* per cent., this suspension of works may continue for some time. I am to send copies of the advertisement for loans that you may give the matter as much circulation as possible.

I am also directed to remind you that the Board's order to prepare detailed estimates, and general plans and sections of your districts, issued last season, have not yet been complied with, and that as you may not again have such another opportunity of complying with this very important order, you should use every possible expedition in furnishing these documents. The Board recommend you to complete your preliminary inquiries, for the same reason.

By Order,
(signed) J. C. Walker, Sec.

The above sent to engineers in charge of districts.

(Circular.)

Sir, 9 July 1847.

With reference to the Board's circular of the 5th June, you are requested to send a return upon Form O, of the names, rank and pay of your staff, whose services might be dispensed with in the event of want of funds to carry on the works with more vigour than at present.

I am, &c.
(signed) J. C. Walker, Sec.

(Circular.)

Sir, 14 July 1847.

The Board direct that you will proceed with the works in your districts which were stopped by the Circular of the 5th June, so as to employ the number of labourers and the necessary staff employed by you at that date; but you are not to make any additions to the numbers of these persons employed, without first reporting the probable increase in the numbers proposed to be taken in, and the reason for the increase.

I am again to request you will furnish the detailed estimates of every district in which you are carrying on works.

By Order,
(signed) J. C. Walker, Secretary.

General Preliminary Survey Report.

Sir, 23 July 1847.

I am directed by the Board to instruct you, in all cases reported upon by you, to accompany your report by a diagram, plan and section.

I am, &c.
(signed) J. C. Walker, Secretary.

Appendix D.

(Circular.)

Sir, 6 August 1847.

I am directed by the Board to inform you that tenants' names will not in future be required in reporting upon cases under the Drainage Acts, as they are now required to concur in the assent of their landlord.

See second section of the 10 & 11 Vict. c. 79, enclosed herewith for your information.

I am, &c.
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 6 August 1847.

I am directed by the Board, in consequence of the frequent occurrences of accidents in blasting operations, to send you the enclosed copy of Instructions, attention to which will, it is hoped, diminish the number of such accidents in future.

I am, &c.
(signed) J. C. Walker, Secretary.

Instructions for Blasting Rock in the Works on the Shannon.

The Commissioners, considering that the operations connected with the blasting of rock are not usually conducted in the most judicious manner, request the attention of resident engineers, foremen and overseers to the following points, in all works carried on under their immediate direction, with a view not only to safety, but to rapidity of execution and economy.

The charges of powder are not to be regulated in proportion to the depth of the hole bored, as is the common practice, but according to the length of the line of least resistance, or thickness of the rock to be blasted.

The line of least resistance will be the shortest line from the bulk of the charge of powder to the surface, if the mass exposed to the action of the explosion be of equal consistence throughout.

Charges of powder, to produce similar proportionate results, ought to be as the cubes of the lines of least resistance.

Thus, if 4 oz. of powder would just have a given effect upon a solid piece of rock of 2 feet thick, 13½ oz. would be required to produce the same effect upon a piece of rock 3 feet thick:—that is,

	Cube of 2 feet, Line of least resistance,		Charge in oz.		Cube of 3 feet.		Charge in oz.
As	8	is to	4,	so is	27	to	13½.

Or (which is the same thing), on that particular datum, the number expressing half the cube of the line of least resistance in feet, will be the charge in ozs. See the following Table, showing charges of powder for given lines of least resistance, calculated on this principle, and on the assumed datum of 4 oz. for 2 feet.

Lines of least Resistance.		Charges of Powder.		Lines of least Resistance.		Charges of Powder.	
Ft.	*in.*	*Lbs.*	*oz.*	*Ft.*	*in.*	*Lbs.*	*oz.*
1	0	0	0½ *	4	9	3	5½
1	3	0	1	5	0	3	14½
1	6	0	1¾	5	3	4	8¼
1	9	0	2½	5	6	5	3¼
2	0	0	4	5	9	5	15
2	3	0	5½	6	0	6	12
2	6	0	7¾	6	3	7	10
2	9	0	10¼	6	6	8	9¼
3	0	0	13½	6	9	9	9¾
3	3	1	1	7	0	10	11½
3	6	1	5½	7	3	11	14½
3	9	1	10¼	7	6	13	3
4	0	2	0	7	9	14	8¾
4	3	2	6½	8	0	16	0
4	6	2	13¼				

* In using so small a charge of powder as for 1 foot, a little excess is usually required, but ¾ oz. or 1 oz. will be sufficient.

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Fig. 1.
(Page 261.)

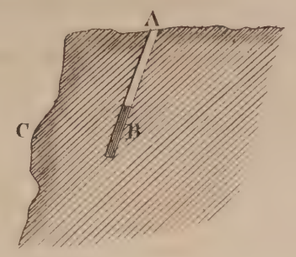

Fig. 2.
(Page 261.)

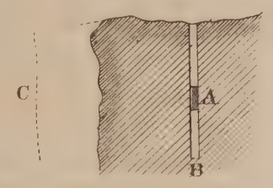

Fig. 3.
(Page 261.)

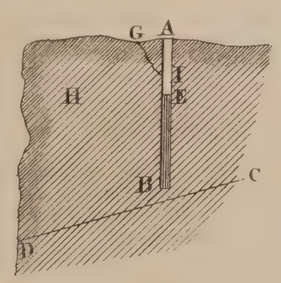

Fig. 4.
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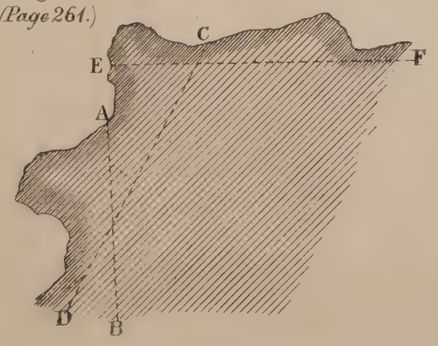

Fig. 5.
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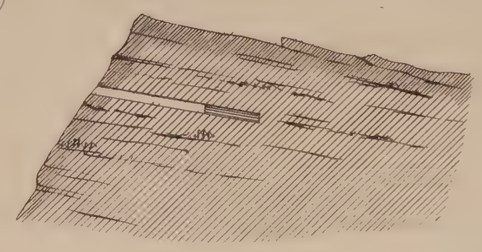


Fig. 6.
(Page 261.)

Fig. 7.
(Page 261.)

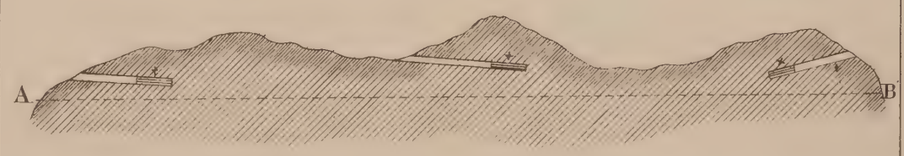


Fig 8.
(Page 262.)

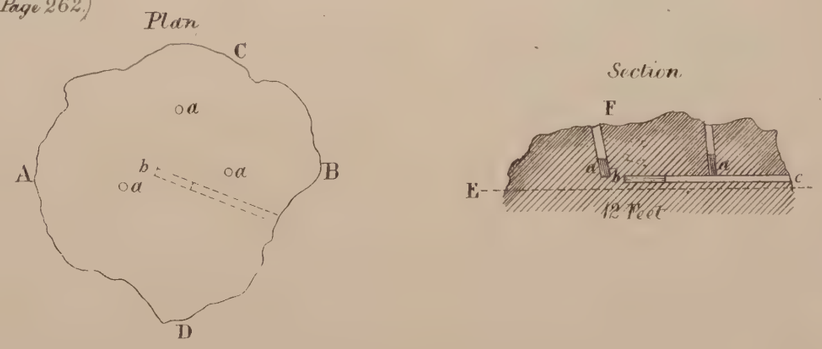


Fig. 9.
(Page 262.)

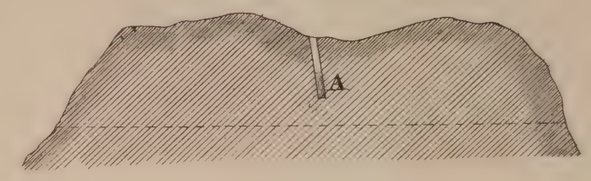


Fig. 10.
(Page 262.)

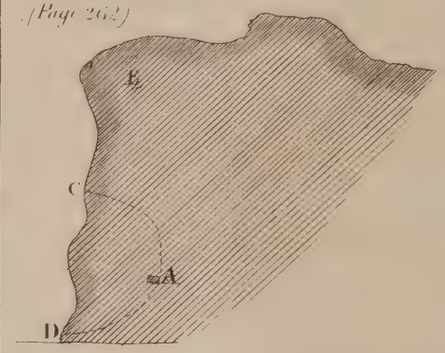


Fig. 11.
(Page 262.)

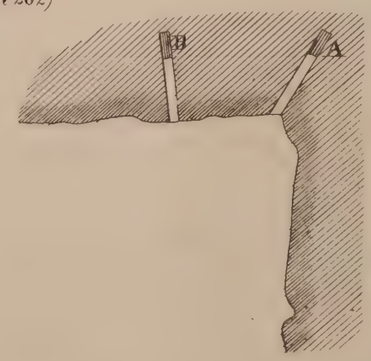


Fig. 12.
(Page 262.)

PLAN Nº 3.
[To face Page 260.]

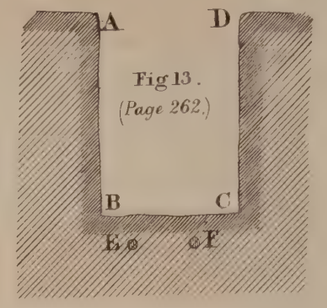


Fig 13.
(Page 262.)

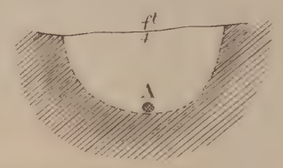


Fig 14. *(Page 262.)*

Fig. 15.
(Page 262.)

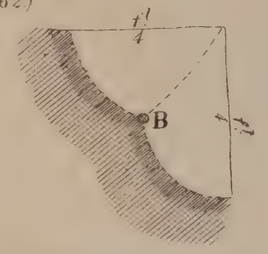


Fig. 16.
(Page 262.)

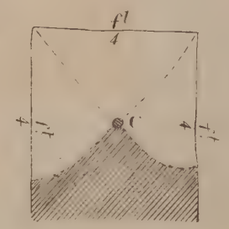
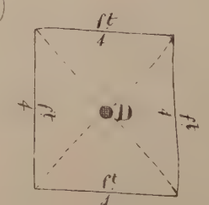


Fig. 17.
(Page 262.)



J. Arrowsmith, Litho

(Nº 10.) Ordered, by the House of Commons, to be Printed, 22 November 1852.

Henry Hansard, Printer.

This datum will probably answer for most cases, but trials may be made of it in the commencement of any work, and a Table drawn up accordingly; in the larger class of explosions, advantages may usually be taken of fissures in the rock, and other circumstances by which the charges may be greatly reduced.

It is useful at times to know the space in round holes that given quantities of gunpowder will occupy; the following Table will give the means of calculating them :—

Diameter of the Hole.	Powder contained in One Inch of Hole.	Powder contained in One Foot of Hole.	Depth of Hole to contain One Lb. of Powder.
Inches.	*Lbs. oz.*	*Lbs. oz.*	*Inches.*
1	0 0·419	0 5·028	38·197
1½	0 0·942	0 11·304	16·976
2	0 1·676	1 4·112	9·549
2½	0 2·618	1 15·416	6·112
3	0 3·770	2 13·240	4·244

One pound of powder loosely poured, but not close shaken, will occupy about 30 cubic inches; a cube foot weighs about 57½ lbs.

To obtain the full effect of any charge of powder, the line of least resistance, if it be practicable, should not be in the direction of the hole bored.

Thus, if A B, fig. 1, be a hole bored in rock, it should be of such depth and direction that the explosion may find least resistance towards C, and not towards A; B C is then the line of least resistance, and the charge of powder at B will be 4 oz. or 13½ oz. or 2 lbs., according as the thickness B C shall be 2 or 3 or 4 feet, and not in any respect according to the depth of the hole A B. For instance, if B C be 2 feet, the charge at B should be 4 oz., whether the hole A B be 3, 4 or 5 feet or any other depth.

It is a difficult question to fix precisely the extent of tamping necessary to force the effect of the explosion in a direction different from that of the hole bored. That extent will be by no means necessarily in a constant ratio with the distances in other directions to the surface, but is dependent also upon other circumstances.

In small blasts (of 2 or 3 oz. for instance) the charge, not being out of proportion to the diameter of the hole, may find a ready vent if the tamping be not considerable, just as in firing a gun; while larger explosions are so far impeded in forcing their way through the small opening occupied by the tamping, as necessarily to produce a great pressure in all directions; thus a charge of a few ounces at A, fig. 2, might blow out the tamping above it, producing at the same time very little effect on the rock; while the same degree of tamping, or a very little more, might resist a much larger charge prolonged to B, although it had a proportionate line of least resistance to C, more particularly if there be any fissures in the rock, or other circumstance to assist in its rupture; for the instant the rock is opened, the effect of the explosion on the tamping appears practically to cease.

The following strong instance of this actually occurred in granite rock. A hole A B, fig. 3, of 3 inches diameter, was sunk down 11 feet deep, very near to a natural sliding joint C D; it was loaded with 19 lbs. 12 oz. of powder, which occupied the space up to E, being 7 feet of the hole, leaving, consequently, only 4 feet for tamping; the explosion brought down the whole mass H, as was intended, leaving, however, a small collar A G I, 2 feet 6 inches deep, in which the tamping (of clay) remained undisturbed.

Although importance is attached to not having the tamping blown out, it is not meant that it may not be advantageous to let the shock reach the surface from which the hole was bored; on the contrary, it is desirable that it should do so, as thereby another face for the extension of the effect of the explosion is afforded, instead of its action being confined to one, which, for reasons explained in connexion with figures 14, 15, 16 and 17, is the least advantageous.

As rock is usually of very irregular form, where the mass is extensive, as in a quarry, an endeavour should be made to obtain an exposed face tolerably even, either vertical, inclined or horizontal, as A B or C D, or E F, fig. 4, then by boring holes parallel to such face, the charges can be better proportioned and adjusted than when working on very uneven surfaces, and their effective action considerably increased.

When the rock is stratified, and in close beds and seams, as in fig. 5, the holes should be bored in the direction of the joints, or parallel to them, and the surface to be lifted laid bare, which will give more effect than if the charge be placed across the grain, and the operation of boring will be more easy.

In many cases, particularly in clearing away small masses of rock, the position of the charges cannot be arranged in the most perfect manner, still much may be done by bearing the true principles in mind; the explosion should still as much as possible be forced through the solid rock and not by the side of the hole bored, and the length of the line of least resistance should be determined as well as the circumstances will admit.

Suppose it be required to cut down projecting rocks to the lines A B or C D, for a road or canal, &c. (*see* figs. 6 and 7), much of it may be done by successive charges placed as at

Appendix D.

x, x, x, x, with a great deal more effect than by the usual manner of boring straight down.

Suppose, again, a rock of the form A B C D, fig. 8 (of which E F G is a cross section), say 12 feet long by 3 feet 6 inches deep, which is to be cut down to the line E G: the ordinary manner of proceeding would be by three or four holes a, a, a, vertical or nearly so, whereas the one c b would no doubt be far more efficient and economical.

Whether the explosion is to be in the direction of the hole bored or not, still the same law must be attended to of proportioning the powder by weight, according to the cube of the length of the line of least resistance, and not according to the depth of the hole. The following example will show how erroneous it is to proportion the charges by the depth of the hole:

Suppose the hole A, fig. 9, to be 3 feet deep, and a charge be applied of one-third of its depth (a usual proportion), it may be a matter of chance whether this hole be 1 inch or 1½ inch bore, whereas the charge in the latter case will be more than double what it would be in the former, which is manifestly absurd.

In small charges, more powder is commonly used than is necessary; whenever a loud report is heard, or fragments of stone are thrown out into the air, the system pursued, whether necessary or not, has not been advantageous; when the best effect is produced the report is generally trifling, but the mass is seen to be lifted and thoroughly fractured without the projection of stones. It may be observed, that though the rock be not apparently fractured by any blast, the explosion will have had some useful effect, provided it has not found its entire vent from the hole bored, and a second shot from the same hole will be found very effective.

Where there is a high face of rock, a system of undermining may be advantageously employed; thus, by a blast at A, fig. 10, an opening may be made from C to D, and the mass E, if not shaken so as to be worked by crowbars or wedges, will be easily brought down by slight subsequent blasts.

The worst situation for a charge of powder is in a re-entering angle, as at A, in the horizontal section, fig. 11. The rock there exerts such pressure all round it, that very little effect can be expected, nor is its position much improved at B.

This situation occurs very frequently, and should be avoided as much as possible. Thus, a charge at A, fig 12, would have a line of least resistance to B, but the force of the explosion would be greatly reduced by the masses C C, and the charge must be increased accordingly.

This inconvenience is strongly exemplified in cutting through any narrow confined space, A B C D, fig. 13, such as in sinking a shaft or making a small gallery; blasts at E and F must be very disadvantageous, and the result, as experience has shown, slow and expensive.

The next most unfavourable position is when there is only one even face exposed; the best mode of operating in such case is, if practicable, to bore the blasting holes at the back of or under, and in either case parallel to that face, either vertically, inclined or horizontally, as the case may be, and proceed as shown in fig. 1.

The most favourable position of all is in a projection, and the advantages are greater, in proportion to the number of faces to which the action of the blast can be extended; thus, A B C D, figs. 14, 15, 16 and 17 (viewed in plan), being holes sunk to such depth as to cause the explosion to find vent at the side, it will be seen by the blank spaces, showing the assumed effect, how the result is increased with the same expenditure of powder and labour by the greater number of faces exposed, or within reach of the effect of the explosion; the advantages, however, would be even more than appears by these figures, because at B C and D the effects of the explosion would extend farther in the direction of the exposed sides, than where closely bound laterally, as at A; that is, smaller quantities of powder would answer for equal lines of least resistance, in the cases shown by figs. 15, 16 and 17, than would be required in the case shown by fig. 14.

With regard to the practical mode of working, it is not considered necessary here to advert in detail to the tools to be used in boring the holes, or the best mode of preparing them, as these are subjects very generally understood; but it may be well to observe, that every means, consistent with the execution of the greatest quantity of work in a given time, should be resorted to, in order to lessen, by the use of good materials, by good workmanship, and the best application of both, the great consumption of iron and steel which usually takes place in works of this kind.

Much good may also be done by carefully adjusting the weight of the hammers or sledges to the length of the jumpers and diameter of the bits used in boring the holes, and generally, it will be desirable to observe how far any alteration in the form, weight or application of these tools tends to increase the quantity of work done by the same men in any given time.

For loading correctly, with safety, despatch and with economy of powder, the miners should be provided with copper measures, tubes and funnel, by means of which any quantity of powder may be introduced, and made to pass clear down to the end of the hole, without a possibility of leaving any hanging on the sides to be wasted, or to occasion accident.

When the holes are horizontal, or so nearly so that the powder will not run down, it must be pushed through the tube with a wooden ramrod, or made up in cartridges and passed into the hole.

The powder may be taken out to the works in copper canisters, properly prepared for use, as well as for security against loss, accident or wet.

The

The safety fuse, for firing the charge, is to be employed on all occasions.

A piece of fuse is to be cut off by measurement according to the depth of the hole and the charge, so that an inch or two may remain above the mouth of the hole; it is to be then straightened and inserted with care after part of the powder has been put in, so that its end, which is to be a little stripped, may be well buried in the charge; the principal precautions necessary are, that it does not by any curve catch on the side of the hole, and so, by doubling up, fail to reach the charge; and that in the tamping, particularly at its commencement, the fuse does not get drawn out of the charge; by being careful in these points, there will very seldom be a failure or miss-fire; should a miss-fire occur, however, the tamping is not to be bored out again, as it is a very dangerous practice.—*See* Appendix, page 264, for further directions for using the safety fuse.

For tamping, the best material, as well for efficiency as for safety, is dried clay, and as there are very few districts of country where it is not easily to be obtained, it is that which is recommended to be generally used.

The clay may be rolled into cylindrical pieces of two or three inches diameter, into round balls, or into any other form found convenient, and dried at the fires of the smith's forges; the drier it is the better, provided it be not too much so to remain caked; if so dry as to fall into powder, it is not so efficient.

The next best material is chips and dust of broken brick, which should be moistened with a very little water while being rammed.

Loose sand is thoroughly inefficient; and quarry rubbish or chips and dust of the stone itself (being that which is commonly used) should never be employed, on account of its liability to accident, even although not of kinds that usually strike fire; it is also apt, in being rammed, to cut the fuse.

After the fuse and the whole of the charge have been introduced and the tubes withdrawn, an inch or two of the tamping is simply pressed down over the usual wadding of hay, moss, or dry turf, &c., with the tamping bar, before any hard ramming is commenced, as it is usually at the first few blows of the ramming that accidents take place; the powder having been thus introduced with the tubes, and the wadding and a few inches of tamping pressed upon it, the hard ramming may then be undertaken with perfect security.

This partial looseness of the material near the powder will not only lessen the liability to accident, but tend to increase the effect of the explosion, as it is known that a slight hollow near the charge has that effect.

If these precautions are thoroughly attended to, and the resident engineers and overseers are particularly enjoined to see that they are never neglected, no accident by premature explosion can ever occur.

It will be the duty of the engineer to keep a detailed account of any accidents which may occur during the execution of the work, and having thoroughly investigated the cause of such accidents, to report them to the Commissioners, and enumerate them in the general report hereinafter referred to.

Wherever there may be a necessity for blasting under water or in wet holes, the miners must learn how to prepare the waterproof bags or cartridges, and the mode of applying the particular fuse that is made for that purpose, called sump fuse, as well as the manner of tamping with sand and cones with wedges, where of sufficient importance, and that the clay cannot be rammed. The following is the mode of tamping referred to:—

Having placed the cartridge bag, with the necessary quantity of powder therein and sump fuse attached, in the hole, a sufficient quantity of sand, or sand and clay, is to be poured in to fill the hole to within three or four inches of the top; a cast or wrought iron cone, having a groove to receive the fuse, is then to be let into the hole, and secured therein by means of three or more (according to the diameter of the hole) wrought iron arrows of about ⅝-inch diameter, used as wedges; a piece of rope fastened to the cone is to be passed through the eyes of these arrows, and made fast to a piece of wood as a buoy to prevent their being lost upon the explosion of the charge. The resistance offered by the cone, if properly secured, will be found generally sufficient to prevent the escape of the charge through the hole; its effect in this respect will be improved by having a wadding of hay, grass or other fibrous matter on the sand under the cone.—(*See* the Appendix, page 265, for a further account of blasting under water.)

The resident engineers and overseers are required to be particular in making such arrangements as will secure the powder and fuse from waste or pilfering; these articles, and those of copper above-mentioned, should be at all times under charge of some trustworthy person, and an effectual check kept over the expenditure. A record is to be kept of the manner in which every portion of the powder and fuse are used, as well for such check as for the means of affording other useful information.

To accomplish these objects, the overseer on blasting work should cause to be taken out daily to the work, by some trustworthy man or boy, the gunpowder, fuse, measures, tubes, funnels, six-feet rod, two-feet rule, and ruled book, according to annexed form (*see* Appendix, page 266, Form A.), the smaller articles in some basket, box or other convenient secure manner, and the overseer will himself attend to the loading of every hole and to the noting of the particulars, or in cases where he cannot superintend all himself, he will employ some suitable person who can be depended upon to do so, and whose duty it will be constantly to attend to these matters.

When blasting operations that are to be of any extent are commenced, the resident engineer, or superintending overseer, will take early opportunities of noting the following

Appendix D.

particulars, so as to enable him to transmit periodical reports of the results to the Commissioners:

1. The description of the rock; its denomination, whether hard or soft of its kind, compact or loose. If in strata, what are their bearing and dip, or, in other words, in what direction do the strata lie as regards the horizon and the direction of the excavation to be made; whether it can be worked on by ordinary tools, or whether requiring to be blasted, and, if both, in what proportions; whether it will furnish material fit for masonry, and if so, of what quality, class and dimensions?

2. At what rate, in time, holes of different dimensions are bored, stating the description and number of persons employed?

3. What description of wadding is used?

4. The description of material used for tamping, whence procured, how prepared, and whether any expense or loss of men's time is incurred in procuring it? The time employed in tamping holes of different dimensions, stating the description and the number of persons employed.

5. What description of powder is used, whence procured, and at what price—how the charges are regulated—what effect have given charges of powder had on given lines of least resistance, where good opportunities have been taken of trying them with tolerable precision?

6. What is the rate of pay to blasters, labourers and boys, and how far do the former seem to be well acquainted with their business, and to what kind of blasting have they been chiefly accustomed previously?

7. Is the work provided with a sufficiency of implements, stores and tools, as well in quality as in number, and particularly with proper powder canisters—with fuse, copper measures, tubes and funnels, &c.?

8. What are the arrangements made for the smith's works, for repairing and sharpening tools, &c.? If paid by the piece, at what rate; if by the day, at what wages are smiths and helpers paid? How many is there constant work for, and do they understand their business?

How are coals, iron, steel, forge and smiths' tools supplied, from whence, and at what price?

What are the respective size and weight of the hammers or sledges used for jumpers of different dimensions?

What given quantity of work will the jumpers, &c., do for each time of steeling—for each time of sharpening or pointing; and what quantity of iron or steel is expended on each occasion, or for each cubic yard excavated, according to sizes; and what number can a smith make, steel or point, in any given time?

9. How are the powder, fuse, tools and stores in general regulated, and under what checks for their preservation and due expenditure?

10. Whether any improvement has been made, or can be suggested, either in the mode of boring or general operation of blasting?

Any useful observation that can be made during the course of the work, on the above heads, or on any peculiar circumstance that may occur, is to be reported to the Commissioners.

As the work proceeds, the reports made during its progress on the above matters will be either confirmed or amended by the engineer, as opportunity affords; and accounts being taken of the actual cost of each different portion and description of blasting work done, it will be his duty to report the result in a form similar to Form B. in the Appendix (page 266), accompanied by explanatory plans and sections where requisite, and specimens of the different kinds of rock through which the excavation has been made.

(Appendix.)

EXTRACTS from Papers published by Messrs. HENRY, MULLINS and M'MAHON, relative to the use of Patent Fuse.

DIRECTIONS for using the Miners' Fuse, or Safety Rod.

THE following directions will be found sufficient to enable persons acquainted with blasting to use the fuse with convenience and safety:—

I. Let it be used solely for the purpose of blasting, and not to bind up tools, or to serve instead of cord for any purpose whatever.

II. Let it be kept in a place that is tolerably dry, until wanted for use; it is believed that if the fuse be suffered to remain a considerable time in very damp or mouldy places, it may be injured fully as much as if it had been all the while kept in water.

III. Those men who work in very wet places should ask for sump rods of the person appointed to deliver the materials, as these are intended expressly for that purpose.

IV. There should, in all cases, be some powder put into the hole before the fuse, that the fire may be certainly communicated to dry powder.

V. Before the fuse is placed in the hole, the outside or countering-thread should be stripped down about an inch at the upper end; this will make it take fire sooner, and

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lessen the quantity of smoke, which will be an advantage. The fuse will take about half a minute to burn a foot in the open air, but a little more time should be allowed it when tamped.

Extract from a Paper by Messrs. Henry, Mullins and M'Mahon, relative to use of Patent Safety Fuse, or Sump Fuse, in blasting under Water and Damp Places.

The application of the patent safety fuse renders the operation of blasting rocks under water greatly more facile, expeditious, cheaper, and beyond all comparison less hazardous than the process heretofore in use; indeed, it is barely possible that an accident can occur in using powder for the purpose of blasting, to the explosion of which the safety fuse is applied. The former practice of charging in a tin cylindrical tube, inserted in the hole previously drilled in the rock (the depth and diameter of which was proportioned to the site, quality and magnitude of the rock), so as to receive a sufficient quantity of powder, lodged at such a depth in it as to produce upon ignition the effect sought, was obviously bad. The tube containing the charge was put into the hole from the diving bell, its length being adapted to the height from the bottom of the hole in the rock to the chamber in which the operations were carried on; a series of tubes, having water-tight joints, were then added, consecutively, the bell being elevated to adjust each successive joint, until the final joint was carried a few inches above the surface of the water, when a small piece of red hot iron was dropped into it, by which the powder below was ignited. The process adopted at Kingstown is, to charge the hole (drilled as before) with a water-proof cartridge, into which one end of the sump fuse is inserted; the hole is then tamped (wadded in the usual way), and a length of fuse appended sufficient, while it is burning to the charge, to admit the bell being moved laterally out of the perpendicular line of the explosion, to prevent its being filled with smoke; the length of the fuse being accordingly adjusted, a fire is struck with flint, steel and match-paper, and set to the fuse, which, when lighted, is thrust out under the mouth of the bell, and so left to burn its way through the water to the charge in the rock; in the interim, the signal is given for moving the bell a few feet out of the line of the fire, the fuse burning at the rate of three feet a minute; a piece of four, five, or six feet at most, in length, will afford sufficient time to place the bell in the required position. The blasting now performed at Kingstown, in the preparation of the foundation of the wall of the new commercial wharf erecting there, is in 22 feet water, at low-water of spring-tide.

The advantages arising from the use of the safety fuse in these operations, independently of the security it affords against premature explosion and consequent hazard of loss of life or limb, are obviously of great importance.

Firstly. The charge being tamped in the ordinary way, produces a considerably greater effect from a lesser quantity of powder than if placed in the tube, which does not admit of tamping, being open to the top to receive the fire; thus a saving in the article of powder is made, and more work done at less cost.

Secondly. Whatever the depth of the water may be, five or six feet length of fuse will be sufficient for each shot, whilst the length of tube required must necessarily exceed the depth of water, which at Kingstown, according to the time of the tide, is from 22 to 35 feet.

Thirdly. The fuse is much cheaper than the tubing, the greater part of which (the tubing) is destroyed by each shot.

Fourthly. In using the fuse the bell need not be raised to a greater height than that at which it rested during the drilling, charging, tamping, and firing the hole; with the tube, the bell, five tons weight, must be raised entirely out of the water before the fire can be communicated, whilst in the former case it is merely pushed horizontally a little out of the line of the fire, and in a few minutes, four or five at most, it is restored to its berth to quarry and load in the bucket the ruptured rock, or to prepare for another shot, as the case may be. In this particular instance alone considerable time and labour is saved.

The fuse is not less efficacious in its application to powder used in blasting in wet quarries above ground. Heretofore much time and labour were lost in staunching, as it is called, wet holes in rocks so situated. A rock might appear wholly free from water until bored, when the hole serves as a conduit to discharge the water filtered into it through the water joints in the rock; when this happens, which is a very common case in most quarries, the hole must be dried or abandoned; the drying or staunching frequently miscarries, so that a re-bore becomes necessary, in which case great hazard is incurred, time, labour and powder lost, all of which are obviated by the waterproof charger and fuse; so that in any way that it is applied to the purpose of blasting, it is an invention conferring great benefit on the community at large, particularly upon the working classes, whose condition in earning their daily bread exposes them to imminent peril in such hazardous undertakings.

The waterproof charger must be made of canvas or sail-cloth, into a bag of the diameter of the hole, and of a sufficient length to contain the requisite quantity of powder; one end of the sump fuse unravelled for about half an inch, is then to be inserted in the neck of the bag, and tied with a strong thread. The bag, thus prepared, is to be twice or thrice dipped into boiled tar, when it is fit for use.

April 1834.

FORM A.

ACCOUNT of the Blasting Work at

Date.	Name of Borer.	Hole.		Assumed Length of Line of least Resistance.	Charge of Powder.	Length and Description of Tamping.	Effect produced, and Remarks.
		Diameter.	Depth.				
184 .		*Inches.*	*Ft. in.*	*Ft. in.*	*Lbs. oz.*		

Overseer.

The overseer of the blasting work will be supplied with a memorandum-book, ruled according to the above form, in which he is to enter the particulars of each hole bored under the different headings above given.

FORM B.

GENERAL REPORT of Blasting Operations, at

Description and Quality of Rock, with the Dip and Direction of the Strata.	No. of Cubic Yards excavated.	Time spent in excavating.	Cost of Labourers and Overseers employed in excavating.	Quantity used		Cost of Smiths' Work.	Quantity used		Total Cost of excavating.	Cost of excavating per Cubic Yard.
				of Iron.	of Steel.		of Powder.	of Fuze.		
		Days.	*£. s. d.*	*Lbs.*	*Lbs.*	*£. s. d.*	*Lbs.*	*Coils of 8 Yards.*	*£. s. d.*	*s. d.*
TOTALS - -										

ABSTRACT.		OBSERVATIONS.
	£. s. d.	
Labourers and Overseer - -		
Powder, at per lb. - - - -		
Fuse, at per coil - - -		
Iron, at per lb. - - - -		
Steel, at per lb. - - - -		
Smiths' Work - - - -		Engineer.
TOTAL - -		Dated this day of 184 .

(Circular.)

(Circular.)

Sir, 13 August 1847.

The Board direct me to refer you to their circular of the 29th July 1846, and several subsequent letters, by which a detailed estimate was required for each district, divided into reaches or divisions, and to be accompanied by section and plan, showing each reach or division: I am now to state that the Board have ordered a record of these detailed estimates to be kept, and I am to request you will comply with this order for the districts named in the margin, giving preference to those in which the works are nearly completed.

Detailed estimates for some of these districts were furnished by the parties who reported upon them, and are in this office, and can be supplied, if you think they would facilitate your compliance with this order.

The following is the heading of the book provided for the purpose:—

1. No. of Reach.	2. Name of Reach.	3. Tributaries in Reaches.	4. Amounts of Subdivisions in Reach.	5. Amounts of Reaches.

The county work is to be given separately.

I am, &c.
(signed) Jos. C. Walker, Secretary.

(Circular.)

Sir, 8 September 1847.

The Board direct, that in proportion as the harvest work ceases, you will afford employment to the able-bodied labourers; you are to proceed with increased vigour to execute the works entrusted to your charge, so as to afford as much employment as possible during the autumn and winter months. To be enabled effectually and economically to carry on the works during the autumn and winter, it will be necessary for you to have all works of a preparatory nature, such as the removal of main obstructions, the opening of unwatering courses, &c., executed without delay during the present and ensuing months, and the Board call your immediate attention to the carrying of this order into effect; it will also be necessary that a judicious selection be made of the portions of the works which may with most advantage and economy be reserved for execution during the winter months, such as new cuts, and portions of river-courses where the greatest fall exists, and consequently the works may be prosecuted with least interruption from winter floods. You are to report immediately the amount which you estimate can be expended with advantage in each district under your charge, under the foregoing arrangements, between this time and the 31st of March next.

In cases of districts in which the works are in progress under the provisions for summary proceedings, you are directed to report to the Board at least one month before the period when the sum of 3 *l.* per acre shall have been expended on the works, in order that, pursuant to those provisions, the second assents may be sought from the proprietors, to enable the Board to proceed with the further execution and completion of the works.

By Order,
(signed) Jos. C. Walker, Secretary.

(Circular.)

Sir, 12 October 1847.

I am directed by the Board to instruct you to put a person in charge of each district, or reach, or division of a district, whenever the works thereof shall be completed by you.

By Order,
(signed) Jos. C. Walker, Secretary.

Appendix D.

(Circular.)

Sir, 12 October 1847.

I AM directed by the Board to enclose herewith a sketch, showing the mode of unwatering works approved of by the Board, for your information and guidance.

A further supply will be sent for your assistants and overseers in a few days, on your requisition for the number required.

By Order,

(signed) Jos. C. WALKER, Secretary.

RIVER DRAINAGE DEPARTMENT.

(Circular.)

Office of Public Works, Custom House, Dublin,
11 October 1847.

THE Board having ascertained that their instructions conveyed in the circular of the 8th of December 1846,* and other previous communications with reference to the form of cross section to be used in drains, streams, and river-courses, have in many districts been neglected, order the annexed diagram to be prepared, to show in a distinct and palpable form the advantages to be obtained by the adoption of the form of section approved by the Board.

I.—The saving of land.

II.—The saving of excavation.

III.—The improved power of discharge.

IV.—The lowered level of summer water, and yet increased depth of water for the protection of fish.

V.—The saving of expense in the span of bridges and culverts.

VI.—The advantage in the increased scouring power on the bottom, consequent prevention of the growth of weeds and accumulation of deposits, and generally the facilities afforded for the future cheap maintenance of the works.

VII.—The improved form of the cut as a fence between different properties and farms.

It will be observed that the form of section admits of numerous variations, to suit the nature of different soils, without any departure from the general principles upon which the approved form has been founded.

If judicious arrangements be made as to the unwatering of the works, the previous tapping of springs or ponded waters in the adjacent lands, the order of conducting the works, and the use of a proper system of suitable "head and tail taps," the additional depth of sinking can generally be executed without any increase of expense.—*See* Instructions on "Unwatering."

In carrying into execution the designs made for rivers with considerable catchment basins, and but little fall or inclination, it will be found that very considerable saving may be effected by the adoption of the sections here proposed with increased depth, proportionate to the necessities of the case, in lieu of the broad but shallow channels generally proposed.

The Board also direct attention to the instructions already issued as to the disposal of the spoil or excavated material in the filling up of old river-courses, hollows, &c., and require that under no circumstance shall it be placed or suffered to remain nearer than within 6 feet of the edge of the cut, drain, or river-course (except where the substratum of the seat of the spoil be rock), without the special authority of the district engineer, given in writing, as in deep sinking, especially, it is essential for the safety and maintenance of the works that no pressure should be placed on the river banks.

The Board direct that in all works now in progress the approved form of section be adopted, unless the district engineer shall, from the nature of the soil or other causes (to be

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* "I am, at the same time, to call your attention to the necessity, in all your drainage works, of providing for the effectual discharge of the maximum floods at as low a level as practicable (within reasonable limits of expense), so as to provide ample out-fall for the future deep thorough drainage and improvement of such of the adjacent lands as require it.

For this purpose main drains should seldom, if ever, be under five feet deep; small streams and rivulets from six to seven feet; and larger streams and rivers from eight to nine feet, or more, according to the size of the river, with narrow bottoms and side slopes, such as have been so frequently referred to by Mr. Commissioner Mulvany in his communications with the engineers.

By adopting this system, it will be found, both on calculation and in practice, as has been already experienced, that much less land will be wasted, the discharge will be more effectual, and the scouring power on the bottom so improved as to prevent accumulations, and in a great measure to save expense in future maintenance."—*Vide* Board's Circular of 8th December 1846.

PLAN Nº 4.

(To face Page 268.)

DRAINAGE,

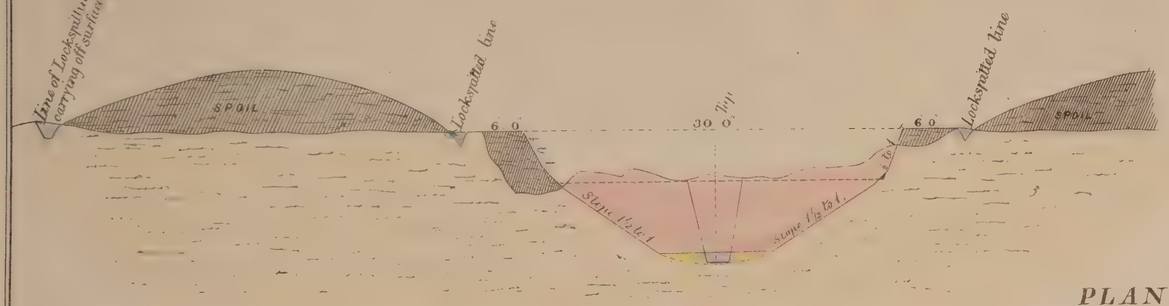
Under the Acts 5 & 6 Vic. c. 89. &c.

Sketch showing the mode of Unwatering the Works.

"IN OPENING CHANNELS THROUGH WIDE RIVER COURSES A DAM UP THE CENTRE OF THE COURSE, WITH THE NECESSARY HEAD DAMS AND TAIL TAPS, WILL GENERALLY BE FOUND THE MOST SUITABLE AND ECONOMIC MODE OF UNWATERING THE WORKS".

CROSS SECTION Nº 2.

Showing Head and Tail Tap on same Level, in cases where the nature of material will admit of deep sinking.



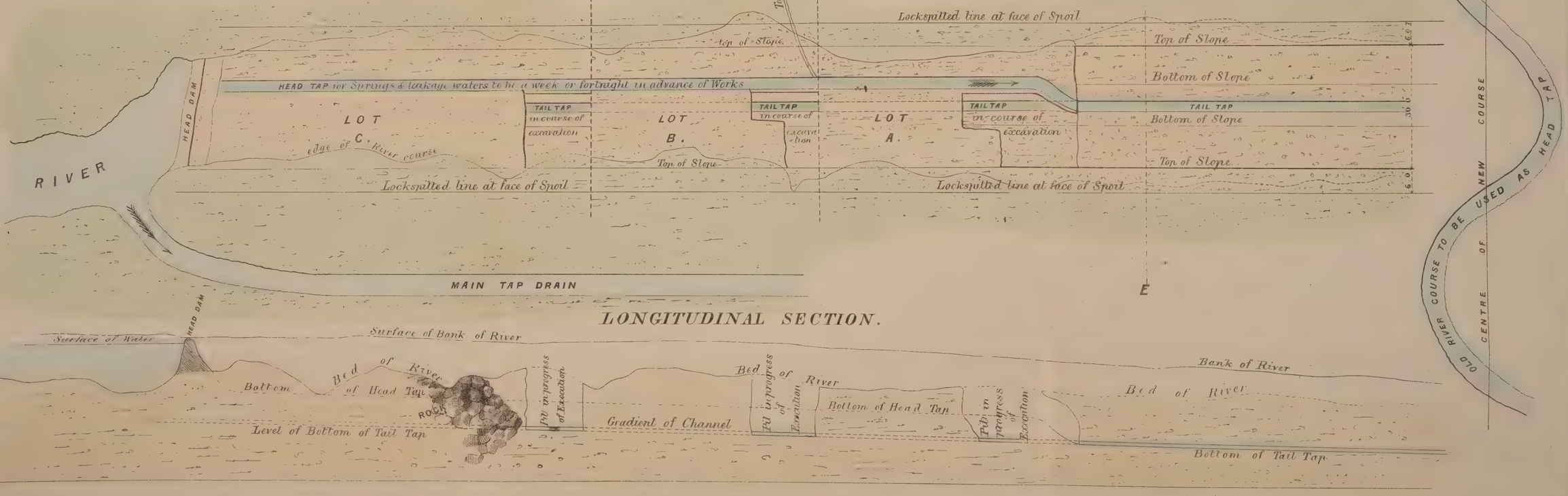
CROSS SECTION IN LINE D.E.

Showing Old Bed of River, and Head & Tail Taps, in cases where from existence of Rock, &c. or material which will not easily stand with steep slopes Head Tap cannot be sunk at first to level of Tail Tap.

FIG. F.

TAIL TAP SHOULD BE FROM 2 TO 3 FEET WIDE AND 1 TO 2 FEET DEEP ACCORDING TO CIRCUMSTANCES.

PLAN.


Spring
Tail from Spring
D
Lockspitted line at face of Spoil
Top of Slope
Top of Slope
Bottom of Slope
HEAD TAP for Springs & leakage waters to be a week or fortnight in advance of Works
TAIL TAP in course of excavation
TAIL TAP in course of excavation
TAIL TAP in course of excavation
TAIL TAP
Bottom of Slope
HEAD DAM
LOT C.
edge of River course
LOT B.
LOT A.
RIVER
Top of Slope
Top of Slope
Lockspitted line at face of Spoil
Lockspitted line at face of Spoil
MAIN TAP DRAIN
E
OLD RIVER COURSE TO BE USED AS HEAD TAP
CENTRE OF NEW COURSE

LONGITUDINAL SECTION.

EXPLANATION.

As soon as the body of the water is turned into the Main Tap, the Head Tap should be executed in the position shown on the above Sections, and kept always a week or two in advance of the Excavators, & should be made so low as to take away the water of the deep pools that are usually found in Rivers, but in no case lower than the bottom of the Tail Tap; by these means, the material to be excavated & the adjacent lands will become consolidated. A small dam or mound may be made along the Head Tap, if the height of water require it, otherwise it is better to remove the stuff taken from the Head Tap at once to the spoil bank as a double shifting may be avoided by doing so. In case of slight deviations from the old River course (See Figure F.) if the old channel be deep, it may be as well to carry the Head Tap through it while the new cutting proceeds in the deviation, but in all cases where the Head Tap can be carried forward as already described, it is the more economic way, being so much work done. The top width of the Head Tap is 3 feet in the present case, but must of course vary according to circumstances.

The Tail Tap should always be kept as forward as possible, as it is the only drain for the water resting on the new bottom in lots A. B. &c. The water may be turned into the Tail Tap in the manner shown on the Plan and Section. When the excavators in A. B. C. have a portion of their lots to bottom level, they should sink the Tail Tap at once, which will answer as a reservoir for the soakage of the lots, whence it may be scooped into the Head Tap. The Ganger in A. should connect the Tail Tap in his lot with that in the finished portion of the Channel. He should also cut the Tail Tap up to B. and so on; each Ganger connecting the taps from lot to lot as soon as it can be conveniently done; when the excavation is completed to B., the Head Tap may be turned into the Tail Tap and the second part of the channel excavated.

OFFICE of PUBLIC WORKS.
7TH OCTOBER 1847.

J. Arrowsmith, Litho.

(Nº 10.) Ordered, by the House of Commons, to be Printed, 22 November 1852.

Henry Hansard, Printer

from six to seven feet; and larger streams and rivers from eight to nine feet, or more, according to the size of the river, with narrow bottoms and side slopes, such as have been so frequently referred to by Mr. Commissioner Mulvany in his communications with the engineers.

By adopting this system, it will be found, both on calculation and in practice, as has been already experienced, that much less land will be wasted, the discharge will be more effectual, and the scouring power on the bottom so improved as to prevent accumulations, and in a great measure to save expense in future maintenance."—*Vide* Board's Circular of 8th December 1846.

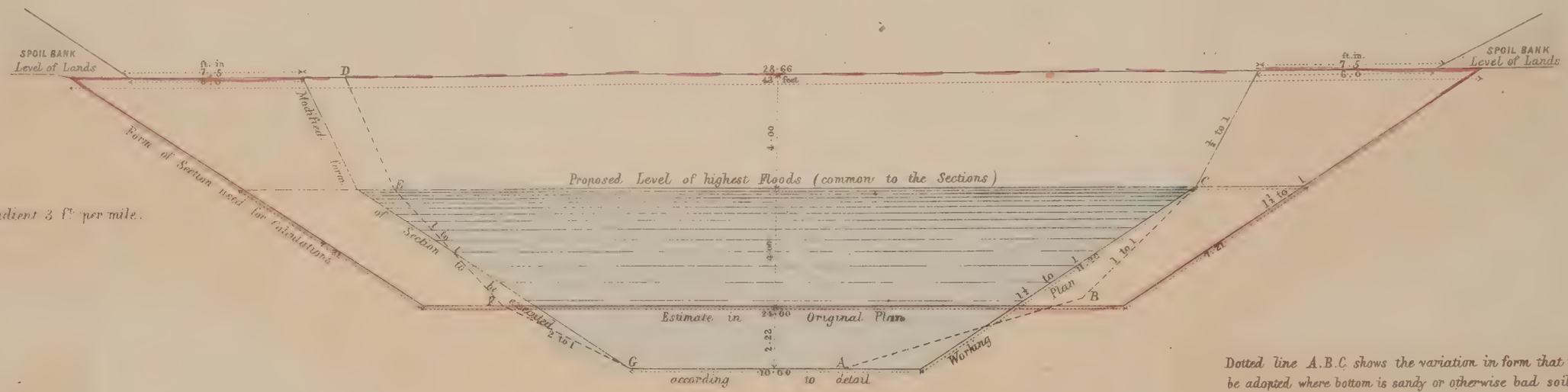
PLAN Nº 5

(To face page 268.)

DIAGRAM Nº 1.

SHOWING FORMS OF TRANSVERSE SECTIONS

FOR RIVERS AND STREAMS.



Dotted line D.E.F.C shows a variation in form that may be used to suit various Soils & by which a still greater saving of Land may be effected.

AREA OF RED FIGURE to flood line 120 Superficial feet.
BORDER OF SAME ..... 38·42 feet
$\frac{120}{38.42}$ = 3·12 M.H.D × 6·00 = 18·72
$\sqrt{18.72}$ = 4·32 × ·91 = 3·93 Velocity per second.
3·93 × 120 = 471·60 ..... Discharge per second.

Saving of Excavation per mile by the Black Figure.
4 × 3 × 5·5 = 66 c.y. × 2 = $\frac{132}{27}$ = 5 cy. in both sides nearly.
5 × 1760 = 8·800 cubic yards per statute mile.

Saving of Land per mile by adopting the Black Figure
7·5 × 2 × 5280 = 79·200 sq. ft. = 1 . 3 . 10 a. r. p. Statute measure.

SCALE 4 FEET TO AN INCH.

Dotted line A.B.C shows the variation in form that may be adopted where bottom is sandy or otherwise bad soil.
AREA OF BLACK FIGURE 120 ft. (to flood line)
BORDER OF SAME ..... 32·40
$\frac{120}{32.40}$ = 3·70 M.H.D × 6 = 22·20
$\sqrt{22.20}$ = 4·71 × ·91 = 4·28 Velocity per second.
4·28 × 120 = 513·60 ..... Discharge per second.

471·60 ... Discharge of Red Figure.
42·00 ... increase discharge per second.

42 × 60 = 2520 C.F. increased discharge per minute, by adopting the Black Section.

DIAGRAM PREPARED ACCORDING TO Mr. MULVANY'S DIRECTIONS BY

William Fraser

DISTRICT ENGINEER.

BORRIS-IN-OSSORY
October 1847.

John Arrowsmith, litho.

(Nº10) Ordered, by the House of Commons, to be Printed, 22 November 1852

Henry Hansard, Printer.

PLAN Nº 6

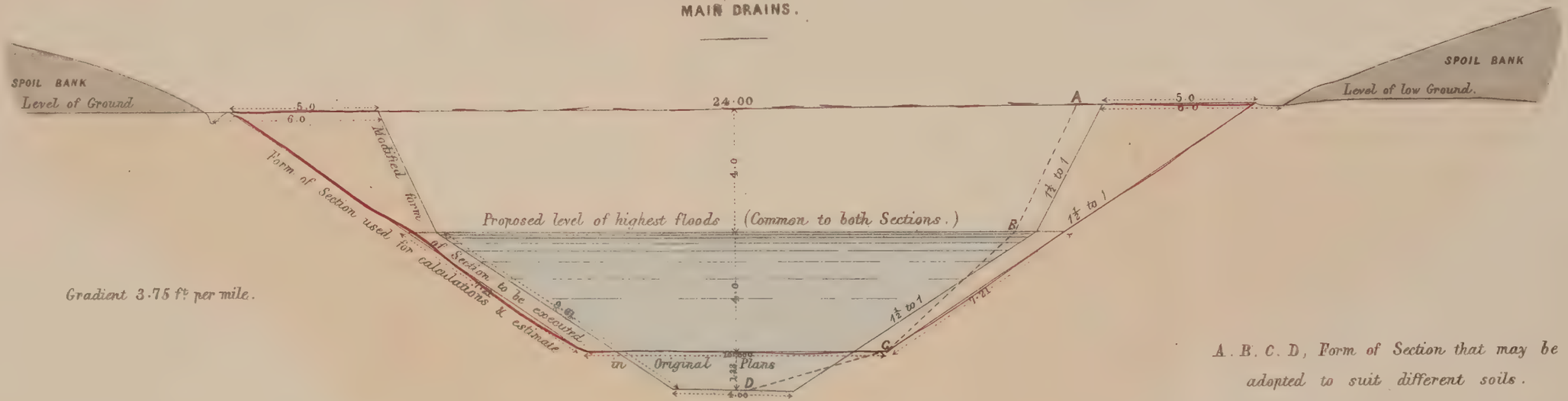
[To face Page 268.]

DIAGRAM Nº 2.

SHOWING FORM OF TRANSVERSE SECTIONS FOR STREAMS, &c.

Similar principles to be adopted in the Transverse Section of

MAIN DRAINS.



Gradient 3·75 ft per mile.

A. B. C. D, Form of Section that may be adopted to suit different soils.

AREA OF RED SECTION *to flood line 64·00 Superficial feet.*

BORDER OF SAME ..... 24·42 *lineal feet.*

$\frac{64·00}{24·42} = 2·620$ M.H.D $\times$ 7·50 = 19·650

$\sqrt{19·650} = 4·433 \times 91 = 4·034$ *Velocity per second.*

$4·034 \times 64·00 = 258·176$ = *Discharge per second.*

SCALE 4 FEET TO AN INCH.

AREA OF BLACK SECTION *to flood line 64·00 Superfic.l feet.*

BORDER OF SAME ..... 28·22 *lineal feet.*

$\frac{64·00}{28·22} = 2·356$ M. H. D $\times$ 7·50 = 20·670

$\sqrt{20·670} = 4·546 \times 91 = 4·136$ *Velocity in feet per second.*

$4·136 \times 64·0 = 264·704$ = *Discharge per second.*

$258·176$ = *Discharge of Red Section.*

$6·528$ = *Increase per second.*

$\frac{60}{391·680}$ = *Increase per minute.*

or nearly 392 Cubic feet increased discharge pr minute by adopting the Black Section.

Saving of excavation per mile by adopting the Black figure.

$4 \times 3 \times 3 = \overset{C.F.}{36} \times 2 = \frac{72}{27} = 2·6 \times 1760 = \overset{C.Y^{ds}}{4·576}$ *per statute mile.*

Saving of land per mile by the Black figure,

$10 \times 5280 = \overset{Sup.\ Ft}{52800} = \overset{A.\ R.\ P}{1.0.35}$ *statute measure.*

DIAGRAM PREPARED ACCORDING TO Mr MULVANY'S DIRECTIONS BY

William Fraser

DISTRICT ENGINEER.

BORRIS-IN-OSSORY,
October 1847.

John Arrowsmith, litho.

(Nº 10.) Ordered by the House of Commons, to be Printed, 22 November 1852.

Henry Hansard, Printer.

be fully stated by him in his Report), deem it necessary to report to the Board his opinion that it is unsuited.

To facilitate the laying out of the works, the annexed Tables have been prepared and ordered by the Board to be printed.

By Order,

Jos. C. Walker, Secretary.

To Engineers on Drainage Works.

Drainage under the Acts 5 & 6 Vict. c. 89, &c. &c.

Tables of Widths, compiled with a view to facilitate the finding of top openings in channels, where the side slopes vary in the manner represented by the annexed cross sections.

Rules to find the top widths from the Tables.

Rule I.

Look in column A for the "depth of cutting," and in a line with it, in column B, is found the breadth of slopes, to which add the bottom breadth, and the sum is equal to the top width of the channel.

Example.—Given the depth of cutting 6 feet 6 inches, and the depth for slopes of 1½ feet to 1 foot, being 4 feet, and bottom width 5 feet, required the top opening.

This belongs to the 1st series; therefore, in Table No. 1, column A, find 6·50, and in a line with it is 14·50, to which add the bottom breadth (5 feet) and the sum 19·50 is the top opening.

Rule II.

It is required to find the top width for a depth not given in the Tables, say 6 feet 9 inches; take 14·50, the breadth for 6 feet 6 inches, and also 15·00 breadth for 7 feet cutting; the mean of these is 14·75, which is the breadth of slopes for 6 feet 9 inches cutting, and may be added to the bottom width as before.

Rule III.

When one side of the channel is higher than the centre, determine the width as if the land were level, then to the half width on the high side add half the additional height, and the sum is equal to the width on that side.

Note.—The Tables are calculated for depths increasing by 6 inches, which is near enough for practical purposes, but the widths can be taken out for any depth of cutting.

Appendix D.

TABLES of WIDTHS, &c.—*continued.*

FIRST SERIES.

TABLE No. 1. Slopes, 1½ to 1 for 4 Feet from Bottom; ½ to 1 for the Remainder to the Surface of Cutting.		TABLE No. 2. Slopes, 1½ to 1 for 4 Feet 6 Inches from Bottom; ½ to 1 for the Remainder to Surface.		TABLE No. 3. Slopes, 1½ to 1 for 5 Feet from Bottom; ½ to 1 for the Remainder to the Surface of Cutting.		TABLE No. 4. Slopes, 1½ to 1 for 5 Feet 6 Inches from Bottom; ½ to 1 for the Remainder to Surface.		TABLE No. 5. Slopes, 1½ to 1 for 6 Feet from Bottom; ½ to 1 for the Remainder to Surface.	
Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.
Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
4·00	12·00	—	—	—	—	—	—	—	—
4·50	12·50	4·50	13·50	—	—	—	—	—	—
5·00	13·00	5·00	14·00	5·00	15·00	—	—	—	—
5·50	13·50	5·50	14·50	5·50	15·50	5·50	16·50	—	—
6·00	14·00	6·00	15·00	6·00	16·00	6·00	17·00	6·00	18·00
6·50	14·50	6·50	15·50	6·50	16·50	6·50	17·50	6·50	18·50
7·00	15·00	7·00	16·00	7·00	17·00	7·00	18·00	7·00	19·00
7·50	15·50	7·50	16·50	7·50	17·50	7·50	18·50	7·50	19·50
8·00	16·00	8·00	17·00	8·00	18·00	8·00	19·00	8·00	20·00
8·50	16·50	8·50	17·50	8·50	18·50	8·50	19·50	8·50	20·50
9·00	17·00	9·00	18·00	9·00	19·00	9·00	20·00	9·00	21·00
9·50	17·50	9·50	18·50	9·50	19·50	9·50	20·50	9·50	21·50
10·00	18·00	10·00	19·00	10·00	20·00	10·00	21·00	10·00	22·00
10·50	18·50	10·50	19·50	10·50	20·50	10·50	21·50	10·50	22·50
11·00	19·00	11·00	20·00	11·00	21·00	11·00	22·00	11·00	23·00
11·50	19·50	11·50	20·50	11·50	21·50	11·50	22·50	11·50	23·50
12·00	20·00	12·00	21·00	12·00	22·00	12·00	23·00	12·00	24·00
12·50	20·50	12·50	21·50	12·50	22·50	12·50	23·50	12·50	24·50
13·00	21·00	13·00	22·00	13·00	23·00	13·00	24·00	13·00	25·00
13·50	21·50	13·50	22·50	13·50	23·50	13·50	24·50	13·50	25·50
14·00	22·00	14·00	23·00	14·00	24·00	14·00	25·00	14·00	26·00
14·50	22·50	14·50	23·50	14·50	24·50	14·50	25·50	14·50	26·50
15·00	23·00	15·00	24·00	15·00	25·00	15·00	26·00	15·00	27·00
15·50	23·50	15·50	24·50	15·50	25·50	15·50	26·50	15·50	27·50
16·00	24·00	16·00	25·00	16·00	26·00	16·00	27·00	16·00	28·00
16·50	24·50	16·50	25·50	16·50	26·50	16·50	27·50	16·50	28·50
17·00	25·00	17·00	26·00	17·00	27·00	17·00	28·00	17·00	29·00
17·50	25·50	17·50	26·50	17·50	27·50	17·50	28·50	17·50	29·50
18·00	26·00	18·00	27·00	18·00	28·00	18·00	29·00	18·00	30·00
18·50	26·50	18·50	27·50	18·50	28·50	18·50	29·50	18·50	30·50
19·00	27·00	19·00	28·00	19·00	29·00	19·00	30·00	19·00	31·00
19·50	27·50	19·50	28·50	19·50	29·50	19·50	30·50	19·50	31·50
20·00	28·00	20·00	29·00	20·00	30·00	20·00	31·00	20·00	32·00

TABLES of WIDTHS, &c.—*continued.*

SECOND SERIES.

TABLE No. 6. Slopes, 1 to 1 for 4 Feet from Bottom; ½ to 1 for the Remainder to Surface of Cutting.		TABLE No. 7. Slopes, 1 to 1 for 4 Feet 6 Inches from Bottom; ½ to 1 for the Remainder to the Surface.		TABLE No. 8. Slopes, 1 to 1 for 5 Feet from Bottom; ½ to 1 for the Remainder to Surface of Cutting.		TABLE No. 9. Slopes, 1 to 1 for 5 Feet 6 Inches from Bottom; ½ to 1 for the Remainder to Surface.		TABLE No. 10. Slopes, 1 to 1 for 6 Feet from Bottom; ½ to 1 for the Remainder to Surface.	
Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.
Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
4·00	8·00	—	—	—	—	—	—	—	—
4·50	8·50	4·50	9·00	—	—	—	—	—	—
5·00	9·00	5·00	9·50	5·00	10·00	—	—	—	—
5·50	9·50	5·50	10·00	5·50	10·50	5·50	11·00	—	—
6·00	10·00	6·00	10·50	6·00	11·00	6·00	11·50	6·00	12·00
6·50	10·50	6·50	11·00	6·50	11·50	6·50	12·00	6·50	12·50
7·00	11·00	7·00	11·50	7·00	12·00	7·00	12·50	7·00	13·00
7·50	11·50	7·50	12·00	7·50	12·50	7·50	13·00	7·50	13·50
8·00	12·00	8·00	12·50	8·00	13·00	8·00	13·50	8·00	14·00
8·50	12·50	8·50	13·00	8·50	13·50	8·50	14·00	8·50	14·50
9·00	13·00	9·00	13·50	9·00	14·00	9·00	14·50	9·00	15·00
9·50	13·50	9·50	14·00	9·50	14·50	9·50	15·00	9·50	15·50
10·00	14·00	10·00	14·50	10·00	15·09	10·00	15·50	10·00	16·00
10·50	14·50	10·50	15·00	10·50	15·50	10·50	16·00	10·50	16·50
11·00	15·00	11·00	15·50	11·00	16·00	11·00	16·50	11·00	17·00
11·50	15·50	11·50	16·00	11·50	16·50	11·50	17·00	11·50	17·50
12·00	16·00	12·00	16·50	12·00	17·00	12·00	17·50	12·00	18·00
12·50	16·50	12·50	17·00	12·50	17·50	12·50	18·00	12·50	18·50
13·00	17·00	13·00	17·50	13·00	18·00	13·00	18·50	13·00	19·00
13·50	17·50	13·50	18·00	13·50	18·50	13·50	19·00	13·50	19·50
14·00	18·00	14·00	18·50	14·00	19·00	14·00	19·50	14·00	20·00
14·50	18·50	14·50	19·00	14·50	19·50	14·50	20·00	14·50	20·50
15·00	19·00	15·00	19·50	15·00	20·00	15·00	20·50	15·00	21·00
15·50	19·50	15·50	20·00	15·50	20·50	15.50	21·00	15·50	21·50
16·00	20·00	16·00	20·50	16·00	21·00	16·00	21·50	16·00	22·00
16·50	20·50	16·50	21·00	16·50	21·50	16·50	22·00	16·50	22·50
17·00	21·00	17·00	21·50	17·00	22·00	17·00	22·50	17·00	23·00
17·50	21·50	17·50	22·00	17·50	22·50	17·50	23·00	17·50	23·50
18·00	22·00	18·00	22·50	18·00	23·00	18·00	23·50	18·00	24·00
18·50	22·50	18·50	23·00	18·50	23·50	18·50	24·00	18·50	24·50
19·00	23·00	19·00	23·50	19·00	24·00	19·00	24·50	19·00	25·00
19·50	23·50	19·50	24·00	19·50	24·50	19·50	25·00	19·50	25·50
20·00	24·00	20·00	24·50	20·00	25·00	20·00	25·50	20·00	26·00

Appendix D.

TABLES of WIDTHS, &c.—*continued.*

THIRD SERIES.

TABLE No. 11.		TABLE No. 12.		TABLE No. 13.		TABLE No. 14.		TABLE No. 15.	
Slopes, 2 to 1 for 2 Feet from Bottom; 1 to 1 for the next 2 Feet, and ½ to 1 for the Remainder to Surface.		Slopes, 2 to 1 for 2 Feet from Bottom; 1 to 1 for the next 6 Feet 6 Inches, and ½ to 1 for the Remainder to Surface.		Slopes, 2 to 1 for 2 Feet from Bottom; 1 to 1 for the next 3 Feet, and ½ to 1 for the Remainder to Surface.		Slopes, 2 to 1 for 2 Feet 6 Inches from Bottom; 1 to 1 for the next 3 Feet, and ½ to 1 for the Remainder to Surface.		Slopes 2 to 1 for 2 Feet from Bottom; 1 to 1 for the next 3 Feet, and ½ to 1 for the Remainder to Surface.	
Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.	Depth of Cutting. A.	Breadth of Slopes. B.
Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
4·00	12·00	—	—	—	—	—	—	—	—
4·50	12·50	4·50	13·00	—	—	—	—	—	—
5·00	13·00	5·00	13·50	5·00	14·00	—	—	—	—
5·50	13·50	5·50	14·00	5·50	14·50	5·50	16·00	—	—
6·00	14·00	6·00	14·50	6·00	15·00	6·00	16·50	6·00	18·00
6·50	14·50	6·50	15·00	6·50	15·50	6·50	17·00	6·50	18·50
7·00	15·00	7·00	15·50	7·00	16·00	7·00	17·50	7·00	19·00
7·50	16·50	7·50	16·00	7·50	16·50	7·50	18·00	7·50	19·50
8·00	16·00	8·00	16·50	800	17·00	8·00	18·50	8·00	20·00
8·50	16·50	8·50	17·00	8·50	17·50	8·50	19·00	8·50	20·50
9·00	17·00	9·00	17·50	9·00	18·00	9·00	19·50	9·00	21·00
9·50	17·50	9·50	18·00	9·50	18·50	9·50	20·00	9·50	21·50
10·00	18·00	10·00	18·50	10·00	19·00	10·00	20·50	10·00	22·00
10·50	18·50	10·50	19·00	10·50	19·50	10·50	21·00	10·50	22·50
11·00	19·00	11·00	19·50	11·00	20·00	11·00	21·50	11·00	23·00
11·50	19·50	11·50	20·00	11·50	20·50	11·50	22·00	11·50	23·50
12·00	20·00	12·00	20·50	12·00	21·00	12·00	22·50	12·00	24·00
12·50	20·50	12·50	21·00	12·50	21·50	12·50	23·00	12·50	24·50
13·00	21·00	13·00	21·50	13·00	22·00	13·00	23·50	13·00	25·00
13·50	21·50	13·50	22·00	13·50	22·50	13·50	24·00	13·50	25·50
14·00	22·00	14·00	22·50	14·00	23·00	14·00	24·50	14·00	26·00
14·50	22·50	14·50	23·00	14·50	23·50	14·50	25·00	14·50	26·50
15·00	23·00	15·00	23·50	15·00	24·00	15·00	25·50	15·00	27·00
15·50	23·50	15·50	24·00	15·50	24·50	15·50	26·00	15·50	27·50
16·00	24·00	16·00	24·50	16·00	25·00	16·00	26·50	16·00	28·00
16·50	24·50	16·50	25·00	16·50	25·50	16·50	27·00	16·50	28·50
17·00	25·00	17·00	25·50	17·00	26·00	17·00	27·50	17·00	29·00
17·50	25·50	17·50	26·00	17·50	26·50	17·50	28·00	17·50	29·50
18·00	26·00	18·00	26·50	18·00	27·00	18·00	28·50	18·00	30·00
18·50	26·50	18·50	27·00	18·50	27·50	18·50	29·00	18·50	30·50
19·00	27·00	19·00	27·50	19·00	28·00	19·00	29·50	19·00	31·00
19·50	27·50	19·50	28·00	19·50	28·50	19·50	30·00	19·50	31·50
20·00	28·00	20·00	28·50	20·00	29·00	20·00	30·50	20·00	32·00

(Circular.)

Sir, 13 October 1847.

I AM directed to request you will furnish to the Board, on or before the 5th of every month, a memorandum of progress of works, accompanied by a tracing from diagrams, showing the situation, &c. of the works.

This to be furnished with the return of expenditure (Form E.) to the secretary; much delay having occurred in sending Form E. amongst the numerous accounts transmitted at the end of each month to the Accountant's department.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 23 October 1847.

THE Board direct me to call upon you for an estimate of the money you can expend upon the drainage districts at work under your directions, from the 1st November to the 1st February inclusive.

This information is required immediately.

By Order,
(signed) E. HORNSBY, Assistant Secretary.

(Circular.)

Sir, 26 October 1847.

THE Board direct me to send you two copies of circular, No. 30, and four copies of unwatering sketch, and to request you will sign the receipt thereof on the opposite margin, and return it to this office.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 23 November 1847.

THE Board direct me to send you 21 copies of a notice to be posted up by you in any districts in which any outrage has been committed, or where a spirit of insubordination evinces itself amongst the labourers employed by you, and to request you will sign the receipt thereof on the opposite margin, and return it to this office.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 7 January 1848.

I AM directed to request that you will furnish the account sent, as soon as possible, with a schedule of—

1st. The names and surnames of all officers, clerks and others serving under the Board of Works in the districts in your charge on the 1st January 1848.
2d. Their ranks or designations.
3d. Their station.
4th. Dates of appointment.
5th. Authority for appointment.
6th. Rate of pay per day, and whether for six or seven days per week.
7th. Scale of personal allowance.
8th. Scale of special allowance.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 14 January 1848.

THE Board direct that, previous to purchasing plant and tools for the works under your charge, you shall in every instance ascertain whether such can be had from the relief stores in the neighbourhood, and if so, you are to purchase the implements there.

By Order,
(signed) J. C. WALKER, Secretary.

Appendix D.

(Circular.)

Sir, 28 January 1848.

Complaints having been frequently made by assistant engineers and others of their not having received the several circulars and instructions issued by the Board with reference to drainage works, you are requested to furnish a list of the circulars and instructions you have received, and also the names of your assistants, specifying after each person the circular, &c. with which he has been supplied.

The Board request your attention to the instructions for assistant engineers, in which it stated that copies of such circulars as may be issued after the appointment of such engineer shall be forwarded to them from the district office; and that, although some of these circulars do not refer directly to the duties of assistants, they are nevertheless required to become acquainted with them.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 3 February 1848.

I am directed to request that, in the event of the money for the payment of labourers employed on drainage works under your charge not being received by you in the proper time, you will report same to this office without delay.

I am, &c.
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 16 February 1848.

You are requested to forward to this office the names of your assistants both permanently and temporarily employed, together with their places of residence, or post towns, with the least possible delay.

I am, &c.
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 15 March 1848.

I am to inform you that the Commissioners direct, that, in addition to the duties performed by your assistant engineers, or surveyors, engaged on the works under your charge, they shall also be directed to sketch in carefully on the Ordnance maps all the lands flooded and injured, with a view to a final valuation of the districts for making the awards.

For this purpose the names of proprietors (according to the 23d section, 5 & 6 Vict. c. 89) must be carefully ascertained, and any lands belonging to them within one statute mile of the lands to be improved.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 20 March 1848.

You are requested to inform the Board, with the least possible delay, of the amount, as far as you are able to determine, which will be required in addition to the present expenditure, to complete each of the several districts in your charge, taking care to enumerate all the districts, even though no expenditure may be necessary on same.

I am, &c.
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 15 May 1848.

As in many drainage districts there are magazines containing large quantities of gunpowder in a very unprotected state, the Board consider it necessary to give directions, that in the event of any local and serious disturbance in your district, you are to take immediate steps to prevent the powder under your charge (if any) from falling into the hands of any parties in a state in which it might be made use of for improper and illegal purposes.

The Board would suggest a very easy method of doing this, by starting the heads of the casks, and throwing water over the contents.

In all cases where it may be necessary to do so, an immediate report must be made to the Commissioners of the fact, and the circumstances which led to its adoption.

By Order,
(signed) J. C. Walker, Secretary.

Sir,

Sir, Office of Public Works, Dublin, 10 June 1848.

The Lords Commissioners of the Treasury having notified to the Board, that they are not to expect, during the present season, any addition to the funds for drainage already sanctioned, I am instructed by the Board to forward the accompanying statement, showing the amount of money available from the first instant for drainage works, maintenance of works during suspension, interest on borrowed monies, and all other expenses, including your own salaries, &c. in each of your districts, and am to acquaint you, that you are under no circumstances to permit the expenditure of a larger sum during the present season.

Although the Board have apportioned on the districts the sums available for each, they shall be glad to receive any suggestion from you relative to an apportionment which you may consider more suitable for accomplishing the objects of this letter.

The Board desire that your immediate attention shall be directed to confining the works to be carried on during this season to those points where the greatest amount of good can be effected by the funds, within the limits of which you are to confine your expenditure; your attention is also directed to the necessity of leaving the works in such a state that the least amount of injury may arise to them during their suspension; and you are further to take care that the works shall be stopped at such a point of the expenditure as will admit of their maintenance during the suspension, without exceeding the sum available.

It is most desirable that the districts which are approaching to completion shall be completed during this season; and the Board therefore direct, that if any of your districts be in so advanced a state, you shall take such steps, and suggest such an allocation of the money available, as will secure their completion during the present season.

All county bridges or public passes that have been interfered with, should be either finished, or put in such a state as to preserve the public accommodation.

You are further to dismiss every person from your staff who shall not be absolutely required for the execution of the works which the fund available will admit of; any preliminary surveys on which you may be engaged are to be suspended, and all persons employed on preliminaries are to be discontinued forthwith.

The Board desire, finally, to impress upon you the necessity of being most careful to stop the works in all districts undertaken under summary proceedings, at such a time as to admit of their conservancy, and the payment of interest on borrowed monies during the suspension, without exceeding 3*l.* per acre, taking the acreage as it was originally set forth in the schedule of proprietors.

By Order,
(signed) Secretary.

(Circular.)

Sir, 15 June 1848.

I am directed by the Board to request that your most particular attention shall be directed to the 60th section of the 5 & 6 Vict. c. 89; and that you shall fully understand its provisions, as the Board are bound to comply with them, and they rely on you for furnishing, immediately after the completion of the works referred to in this section, the necessary information to enable them to determine the proportions of the expenses to be defrayed by the county, barony, or other denomination.

The Board desire that if there be any bridge, culvert or archway for the discharge of water under any public or county road which has been repaired, altered or re-constructed in any of your districts now completed, or nearly so, you will furnish, by return of post, if possible, a full detailed account of the cost of such repair, alteration or re-construction, showing all the items of expenditure, including materials, workmanship and superintendence, and the proportions of these expenses which should be defrayed by the county or counties, barony or half barony, within which such bridge, culverts, archway or road may be situate.

I enclose a form of account from Mr. Roberts with regard to a county bridge in the Ardee district, which will serve to show the particulars of the information required.

I am, &c.
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 16 June 1848.

I am directed by the Board to inform you, that in carrying into effect their orders of the 10th instant, you should endeavour, with regard to the reduction of labourers, to do so as gradually as will be consistent with efficiently carrying the Board's orders into effect, in order to prevent, as far as possible, any tendency to a breach of the peace, from the sudden dismissal of the men. You are, however, clearly to understand that this order is not meant to authorize the resumption of any work which you may have already stopped, or the re-employment of men already dismissed.

I am, &c.
(signed) J. C. Walker, Secretary.

Appendix D.

(Circular.)

Sir, 8 July 1848.

I am directed by the Board to inform you, that second assents are not to be called for in any district, until a supplementary report has been published, showing the expenditure, and a final estimate of the cost of the completion of the works, and any other information requisite for the proprietors; and I am directed to call on you for such a report in all the cases in which second assents are required, or likely to be so.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 10 July 1848.

In furnishing the cost of re-construction or alteration of county bridges in detail, the date of commencing or finishing same is to be given, and the interest charged half yearly up to the date of furnishing the account. Where the monies for executing the works of a district have been borrowed from private individuals, the interest is to be charged at five per cent.; and where lent by the Government, in accordance with the Treasury Minute of December 1, 1846, the rate to be 4 *l.* per cent.

At the head or foot of each detailed account, a clear and concise statement of the necessity for re-constructing or altering each bridge, &c. is to be given, together with a sketch, showing the original state of bridge, and a tracing from section, showing how former bridge was insufficient for discharge of floods.

It will be desirable to ascertain, if practicable, whether former bridges, &c. were built or maintained by grand jury presentments, and whether charged to a barony or baronies, county or counties, at large; for bridges, &c. chargeable to counties are open to traverse, the necessity for accurate accounts in detail, and the other information required, is obvious. You are likewise to furnish a schedule of the form enclosed for each district in which there are works chargeable to counties.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 26 July 1848.

The Board direct that you will furnish, by return of post, the names of all assistant engineers, overseers and check-clerks at present on your staff, distinguishing those that are to be reduced in consequence of the want of funds to carry on the works; and also stating the arrangements you propose with regard to those whom it may be necessary to retain.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 26 & 27 July 1848.

The Board desire to be informed as to the quantity of powder that you may have on hand at present, and where it is stowed; also the nearest barrack or Ordnance store, where it might be removed to for safety, and drawn out as it may be wanted.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 4 August 1848.

I am to desire that you will on no account purchase powder to be used in works carried on under the directions of this Board, until a requisition shall have been forwarded to this office, and the Board's authority given for the supply which you may require, as they will not acknowledge or pay for any powder obtained in any other way.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 7 August 1848.

The Board must again press on you the necessity of completing, in the first instance, the works in such of your districts as are nearly complete, as directed by their circular of the 10th June, and for the full compliance of which the Commissioners hold you responsible.

The

The Board further request you will immediately report to this office on the circumstance of any obstacle arising to the carrying out of this order, such as want of funds, assents, &c.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 9 August 1848.

I am directed to inform you, with reference to the Board's Circular of the 7th instant, as to the completion, in the first instance, of small districts, or districts approaching completion, that the Commissioners require an estimate of the total expense of completing same; and in those cases where second assents will be required, you are reminded that the report for publication must be furnished without delay to this office, as directed by Circular of the 8th July 1848.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 6 September 1848.

Having in a previous Circular directed that in all your districts the flooded and injured lands should be accurately sketched in, and also the names of proprietors, &c. correctly ascertained, with a view to the valuation for the final award, I am directed by the Board to request that you will forward to this office without delay such of the maps and schedules relating thereto as have been completed in accordance with their directions.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 16 September 1848.

The Board request that you will inform them whether the services of a paymaster, in addition to the commissariat officer, are now required to make the payments for all or any of your districts; and if the services of a paymaster can be dispensed with, you are requested to suggest such arrangements as would seem to you best fitted for effecting the necessary payments in future.

By Order,
(signed) J. C. Walker, Secretary.

(Circular.)

Sir, 18 November 1848.

The Board direct that you will furnish, by return of post, on the annexed tabular form, the total amount of salary, travelling and hotel expenses, or allowance received by the parties therein mentioned, for and during the year 1847.

By Order,
(signed) J. C. Walker, Secretary.

NAMES.	TOTAL AMOUNT RECEIVED			
	On Works.		On Preliminaries, or other extra Duty.	
	Salary.	Allowance.	Salary.	Allowance.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.

Appendix D.

(Circular.)

Sir, 24 November 1848.

I AM desired by the chairman to request that, in the periodical return of the number of men employed in your districts furnished to the Board, that it may be stated thereon the aggregate number of men employed in each Poor Law Union, if more than one, connected with the district, and the amount of money expended for the period in each Union respectively.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 24 November 1848.

I AM directed by the Board to request that you will proceed with and complete any preliminaries which you have on hand, so far as this can be done without incurring any additional expense.

In order that this may be effected, the office or other work should be done by yourself, or the assistants who are in receipt of salary from works.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 24 November 1848.

YOU are requested to furnish, without delay, a list of all county bridges that have been finished in any of your districts, and for which presentments have not yet been made, with a detailed statement of the expenditure, so as to enable the Commissioners to lay the same before the Grand Juries for presentment at the next Assizes.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 27 November 1848.

THE enclosed Dockets of Agreement between gang-leaders, on the part of the labourers employed under them, and their superior officers, relative to the letting of lots on drainage works, are sent to you with a view of obtaining your opinion thereon; and should any alteration or amendment occur to you, which you think calculated to render them more perfect and binding on the ganger, and generally applicable, that you may report same without delay to the Board.

By Order,
(signed) J. C. WALKER, Secretary

(Circular.)

Sir, 29 November 1848.

THE Board being unable at present to procure sufficient funds for carrying on the works of drainage during the winter, and as it is uncertain when the necessary funds for the completion of the works now in hand can be obtained, they direct me to express their regret that they are constrained to give orders to stop immediately any works whose progress is dependent upon the issue of Government funds.

For this purpose, the Board direct you will, on or before the 1st proximo, suspend the employment of all men, and of all assistant engineers, overseers, check clerks, timekeepers and office clerks (except your accountant), that can by possibility, or without great injury to the service, be dispensed with; and further, that in any case where this arrangement cannot be carried into effect, by means of the non-completion of some absolutely necessary portion of work, you will make arrangements for carrying the order into effect on or before the 10th proximo, after which date the Board will not hold themselves responsible for, nor pay the salary or wages of, any officers who shall be retained, unless the special sanction of the Board shall have been given in writing for the retention of such officers; nor will the Board pay any accounts for labour incurred after that date (10th proximo), unless their previous sanction be obtained.

You are, therefore, urgently requested, in any case of works now in progress where, in your opinion, it will be absolutely necessary to continue them to some extent, in order either to prevent lawsuits or great injury to any property, or to complete some county bridge, or other public passage or way, to state, before the 5th proximo, the particulars of such works, the estimated cost, and the number of men and assistants which it will be absolutely necessary to retain to complete the work, or put it in such a state as will render it safe until next season.

During

During the suspension of the works, the Board direct that you will, in the first place, prepare the usual annual report and tables on the progress and results of all the works committed to your charge, which report the Board require to be sent to this office on or before the 3d January next as the latest day.

You are further to have your accounts for each district clearly posted up, obtaining from this office any information you may require as to payments made in Dublin, which do not appear in your books. Your earliest attention is also to be directed to a revision of all your designs, and to making a careful estimate of the full amount of money which will be required to complete the works of each district after the 1st January next; and you are requested to furnish, at the earliest possible period, such estimate, together with a brief report of the works remaining to be executed, in order that the Board may be apprized of the total sum of money requisite to complete the whole of the drainage works in Ireland already commenced.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 11 December 1848.

THE Board direct you will send up a complete return of all the persons authorized to be retained after the 10th instant, on your recommendation, in reply to Circular of 29th November, giving their names, rank, rate of pay, &c., and length of time for which their employment is authorized, and districts upon which each is to be employed, and from the funds of which he is to be paid.

You will also bear in mind, that in no case, nor for any person or purpose whatever, can the Board sanction or pay accounts, when the funds provided for a district are exceeded, unless their special authority in writing be given therefor, on a document in which the fact of the funds being exceeded is set forth.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 14 December 1848.

You are requested to furnish, without delay, a statement of any outstanding claims against the several districts in your charge that have not been already furnished.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 24 January 1849.

I AM directed by the Board to request you will furnish immediately the estimate of total cost of completion of works for each of the districts in your charge, in compliance with Board's Circular of 29th November 1848.

By Order,
(signed) J. C. WALKER, Secretary.

(Circular.)

Sir, 1 February 1849.

I AM directed to request you will furnish, by return of post, your estimate of the cost of completion of all works in the districts under your charge; if the detailed estimate be not complete, you are to furnish an approximate amount.

I am, &c.
(signed) J. C. WALKER.

(Circular.)

Sir, 7 February 1849.

THE Board request you will furnish, without delay, a statement, showing the number of acres which have been absolutely drained up to the 1st January 1849, and which may be deemed free from future floods in each of the districts under your charge.

This information is required for the Annual Report to Parliament, which must be prepared forthwith.

By Order,
(signed) J. C. WALKER, Secretary.

Appendix D.

(Staff Circular.)

6 June 1849.

Sir,

In consequence of there being much ambiguity as to the meaning of the word "Staff," and the persons to be returned periodically under that head, and as it is essential to have the matter clearly understood for the future guidance of the Board's officers, it is ordered, that all district engineers, assistant engineers, superintendents of works, district office clerks, district check-clerks, and assistant pay-clerks, being persons who do not change with every partial change of works, be deemed the "Staff," and be returned on the salary monthly accounts, and the monthly sheets of officers employed; that all overseers, check-clerks, time-keepers, store-keepers, office-keepers, mechanics, engine-men, and other persons whose employment is in fact labour, and altogether incidental to labour, and the continuance of which depends on the continuance of labour, be not considered "Staff," but be returned on the labour sheets.

By Order,
(signed) E. Hornsby, Secretary.

(Circular.)

12 June 1849.

Sir,

The Board direct me to apprise you that overseers are not to measure or let work, or otherwise to come into collision with the labourers in reference to the amount of monies they are to receive. All measurements are to be made by the assistant engineers or superintendents of districts, assisted by the district check-clerks, who are to be also measurers of work.

The Board desire me to remind you, that in letting of all works, the docket, showing the quantity and gross amount to be paid for the work, is to be filled and signed, and countersigned by the gang-leader before any work is commenced.

By Order,
(signed) E. Hornsby, Secretary.

(Circular.)

13 June 1849.

Sir,

I am directed by the Board to state, for your information, that in the very first commencement of new works in the distressed counties, it will be necessary for you to take care and make arrangements that the first measurement day, and first day of making up accounts of labour, shall in each case be fixed for the end of the first week from the time the works commence, so that the labourers will only be kept one week without pay, and afterwards the regular fortnightly day may be adhered to without any greater inconvenience to the labourers than having a week's work in advance of pay.

The Board are unwilling again to return to the weekly system of payment, except in extreme cases; and, by adopting the foregoing system, and also by taking care when employing additional men, to have them employed first in the middle of a fortnight, it is hoped that the necessity for weekly payments will be avoided.

You are also to take care to employ the most able-bodied men you can procure.

By Order,
(signed) E. Hornsby, Secretary.

(Circular.)

23 June 1849.

Sir,

The Board direct you to communicate with the Poor Law Guardians, so as to prevent able-bodied employed on the works from being kept on the relief lists for out-door relief; at the same time it is to be distinctly understood, that the drainage works are not to be conducted for the purposes of affording relief by employment, but for the direct objects of drainage, &c. contemplated by the reports in each case; this may be done by inviting the Poor-law Guardians to send their relieving officers to attend at the place of payment, and see the persons who are paid.

By Order,
(signed) E. Hornsby, Secretary.

(Circular.)

Office of Public Works, Dublin, 23 June 1849.

Sir,

I am directed to acquaint you, that the Lords Commissioners of Her Majesty's Treasury have been pleased to appoint Major Foster, of the Royal Engineers, to be employed under this Board, and I am to desire, that whenever he may be instructed to visit the works in your district, or to examine the books in your office or charge, every facility may be afforded him; and that such information or explanations may be given on all matters required by him as will enable him to make his reports to this Board. And I am further to direct, that similar facilities

facilities be afforded to Barry D. Gibbons, Esq. and Edward Russell, Esq., whenever they may visit your district on a tour of inspection; and that these officers may not experience any inconvenience in the event of your absence, you will please give the necessary directions to your assistant engineers, overseers, clerks or others employed under your direction, to afford them access to all documents in their possession, and to render them every assistance they may require in furtherance of the above duty.

I am, &c.
(signed) Edward Hornsby, Secretary.

To

(Circular.)

Sir, 23 June 1849.

The Board desire, that when making requisitions for implements, powder, materials, &c., you will also state the prices at which these can be purchased at the nearest town in your locality.

By Order,
(signed) E. Hornsby, Secretary.

(Circular, No. 5.)

Sir, 2 July 1849.

The Board direct me to inform you, that they disapprove of any pitching or inverts being made under bridges, except in peculiar cases when the Board's express sanction must be obtained thereto; that in every case the bottom level of rivers, and streams under bridges, and for some distance above and below them, must be lower than the general gradient of the river bed, and that in all cases in which it is possible, provision must be made in the construction of bridges, for discharging all the waters of rivers and streams through one arch, thus obviating the possibility of impeding by piers the free discharge of the waters.

The Board further direct, that all longitudinal sections of rivers shall be made at a vertical scale of 10 feet to an inch, and the bottom width and inclination to be shown in every instance.

By Order,
(signed) E. Hornsby, Secretary.

(Circular.)

(22,693.)

Sir, 4 July 1849.

I am directed by the Commissioners to forward you the enclosed copy of a proposal from J. White & Co., for the supply of gunpowder and safety fuze, and to request you will state if you can get powder or fuze on cheaper or better terms in the locality of the works under your superintendence.

By Order,
(signed) E. Hornsby, Secretary.

(Circular, No. 6.)

Sir, 12 July 1849.

The Board having appointed several officers to assist you in conducting the works entrusted to your charge, direct me to apprise you that no additional officers are to be engaged without the special and written sanction of this Board for their employment, and to instruct you to report at once every case of suspension or dismissal, detailing the cause of such suspension or dismissal.

I am further to direct that you will, by circular or letter, intimate to each person employed, that he must be bound by the decision of the Board in reference to the monies to be paid to him for his services, the Board reserving to themselves the right of fining for any neglect of duty, or any improper conduct, and disallowing for time not fully or satisfactorily occupied in the duty of the service, taking care to obtain their signatures in presence of witness to the letter or circular above alluded to, as a proof, should such be required, that they have been so apprized; the document so signed to be carefully preserved.

It will be necessary to obtain the Board's sanction for all alterations of pay.

By Order,
(signed) E. Hornsby, Secretary.

Appendix D.

(Circular, No. 8.)

Sir,

The Board direct me to inform you, that, in consequence of the necessity of having this office supplied with regular reports on the progress of the different drainage works, it is directed that you will be most careful in preparing your usual monthly report, and transmitting same with the strictest punctuality to this office, so as to be received on the 3d of each month subsequent to that for which the report was made.

By Order,
(signed) E. Hornsby, Secretary.

(Circular, No. 10.)

Sir, 31 July 1849.

You are requested to answer the following questions and remarks on the opposite margin, and return the letter without delay to this office.

By Order,
(signed) E. Hornsby, Secretary.

No. 1. Have the Board's repeated instructions, with reference to issuing dockets to gang-leaders, before the men are allowed to enter upon any lot, been carried out in the districts under your charge?

No. 2. Are you conducting the works according to the form of transverse section of rivers and streams approved and ordered by the Board in their Circular (No. 30), dated 11 October 1847?

No. 3. Do you act on the instructions conveyed in the sketch, showing the mode of unwatering works, and do you carry the tail taps below the bottom level of the cuttings?

(Circular, No. 13.)

Sir, 12 September 1849.

I am directed by the Board to apprise you, that in cases where agreements involving future payments are made between you and other parties, the agreement should be in writing, and be approved by the Board.

By Order,
(signed) E. Hornsby, Secretary.

(Circular, No. 14.)

Sir, 25 September 1849.

I am to apprise you, that a letter has been written to the Board's valuators, directing them, when employed, to value districts in which the works have been carried on under summary proceedings, it is the Board's desire that, in examining such districts, they be accompanied by the district or assistant engineer who executed the works, with a view to having accurate information afforded as to the boundaries and extent of the lands drained or improved, the comparative degrees of injury previously sustained by the respective properties, and such other information relative to the previous state of the district as will enable the valuator to make a just estimate of the benefit conferred, or to be conferred, by the works on each portion of land.

I am, &c.
(signed) E. Hornsby, Secretary.

(Circular, No. 14.)

Sir, 13 October 1849.

When it is necessary to store gunpowder for the works in your charge, the Board direct me to inform you it is the desire of his Excellency the Lord Lieutenant that Licenses should be taken out to have and carry arms and ammunition; you will, therefore, at once take the necessary steps for procuring those licenses in the usual way, where required in your district.

I am, &c.
(signed) E. Hornsby, Secretary.

(Circular,

(Circular, No. 16.)

Sir, 29 November 1849.

I AM directed by the Board to request that you will furnish, on the annexed form, a statement of any rents that may be payable to the Board in any of the districts in your charge; and I have further to acquaint you that, when any transaction in reference to rent or produce shall occur, the Board's sanction must be obtained previous to any sale or letting being made.

By Order,

(signed) E. HORNSBY, Secretary.

(Circular, No. 17.)

Sir, 3 December 1849.

THE Board desire me to state, with regard to the interval between this date and the 31st March next, that it is desirable to continue employment by executing such works, or portion of the works, in the several districts in your charge, as may be advantageously prosecuted with a due regard to economy.

The main object to be kept in view is either to complete districts for award, or so to advance the works thereof that they may be advantageously and quickly completed after the period referred to.

The Board request you will give full explanation of the principal works that can be economically executed during the winter and spring, such as new cuts, tributary streams and drains, embankments, bog cuts, levelling spoil, &c., in order that the time and attention of the labourers and staff may be wholly available in summer for those works in the main channel and low parts of the districts that can then only be executed.

The Board further request you will, with the least possible delay, report to them the general nature and extent of the works which you can so execute between this and the 31st March next, and whether there will be required any, and what funds, in addition to those which were allocated on the resumption of the works this season for the districts in which you can so carry on works, in order that arrangements may be made for placing same at your disposal.

In cases of districts carried on under summary proceedings, where second assents are required to enable the works to be prosecuted during the ensuing spring and summer, the Board direct that the necessary supplemental report required by their instructions to be furnished to the proprietors before calling for second assents, be prepared and forwarded to this office without delay.

By Order,

(signed) E. HORNSBY, Secretary.

(Circular, No. 19.)

Sir, 3 December 1849.

I AM directed by the Board to acquaint you that a Commissariat Officer will be instructed to proceed to your station for the purpose of inspecting your store ledgers, and ascertaining the manner in which receipts and issues of stores, implements, stationery, &c. are kept, also to take stock of the above-mentioned articles, and to report upon the manner in which same is stored.

You are requested to give every assistance in your power to this or any other officer who may from time to time be so instructed, and in case of your absence, your assistants should be desired to do the same.

I am, &c.

(signed) E. HORNSBY, Secretary.

(Circular, No. 21.)

Sir, 5 December 1849.

I AM directed to inform you that in all districts carried on under summary proceedings, where second assents are required to enable the works to be prosecuted during the ensuing spring and summer, it is the Board's desire that the necessary supplemental report, required by their Instructions to be furnished to proprietors before calling for second assents, be prepared and forwarded to this office without delay.

I am, &c.

(signed) E. HORNSBY, Secretary.

Appendix D.

(Circular, No. 23.)

Sir, 7 January 1850.

The Board require, with the least possible delay, an estimate of the sum required to complete the drainage works under your charge from the 1st January 1850, including all expenses up to, and inclusive of, the award. You are to state, in the column for Remarks, if the sum given to complete, added to the sum already expended, will be an excess on the original estimate, and if so, the cause of such excess.

By Order,
(signed) E. Hornsby, Secretary.

NAME OF DISTRICT.	Estimate to complete from 1 January 1850.	REMARKS.
	£. s. d.	

(Circular, No. 27.)

Sir, 12 February 1850.

The Board desire me to remind you that in all cases where spoil is unsuitable for manure, or that the adjacent lands do not require such manure, you are to strip off the active soil from the seat of the works and spoil-banks, and neatly resoil the latter, and sow them with grass seeds.

I am also to remind you that every effort should be made to make fair give-and-take lines between the properties of different proprietors, but you must not sacrifice the suitability of the drainage conduit to this object.

By Order,
(signed) E. Hornsby, Secretary.

(Circular, No. 29.)

Sir, 25 February 1850.

The Board being obliged, in compliance with an Order of the House of Commons, to state precisely the amount required to complete the several drainage districts in Ireland, you are directed to furnish a carefully considered estimate for the completion of each of the districts in your charge, giving sufficient details to enable the Board to determine upon its adoption.

The estimates already furnished by you are not satisfactory for the object required; and you are requested to use the utmost despatch, and, at the same time, the greatest care in the preparation of the estimates now called for.

These estimates must be all furnished on or before the 4th proximo.

By Order,
(signed) E. Hornsby, Secretary.

(Circular, No. 31.)

Sir, 28 March 1850.

I am directed by the Board to instruct you to ascertain, by actual and careful observation, the maximum and minimum discharge of water in cubic feet per minute of the different catchment basins of districts in your charge; you are to reduce the results to uniform terms of cubic feet per minute for each acre in the catchment basin, and report the mode of observation, &c. taken by you to determine the quantity.

By Order,
(signed) Wm. Mooney, pro Secretary.

(Circular,

(Circular, No. 32.)

Sir, 12 April 1850.

I AM directed to send to you the enclosed general instructions for the conduct of drainage works, and to request that you will report the portion of the works in your charge which you propose to proceed with according to these instructions, and for the detail plans, section and estimates, of which you have already received the Board's approval.

I am, &c.

(signed) WM. MOONEY, pro Secretary.

RIVER DRAINAGE. (Circular 32.)

GENERAL INSTRUCTIONS for ENGINEERS.

Office of Public Works, Dublin, 10 April 1850.

1. THE district engineers in charge of drainage works are informed that the Lords Commissioners of Her Majesty's Treasury have notified to the Board that funds have been provided for the completion of the works in all drainage districts, the works of which were already commenced.

2. The Board direct that immediate steps be taken for the accomplishment of this object.

3. The first and most important object will be to complete the works in all districts that can be completed this season, so that the final awards may be made without further delay.

4. In all other districts where the Board have the power to proceed with the works, the leading feature must be to open the main outlets, and relieve from further injury lands which have suffered in any degree from the suspension of the works.

5. Any case in which the detailed plans, sections and estimates for these works have not yet received the written sanction of the Commissioners, the engineers are directed to complete the necessary documents, calculations and designs, and forward them to the Board for approval.

6. In any case of isolated works, such as bridges of particular construction, locks or weirs, which, in the opinion of the Commissioners, can be executed by contract for the whole of each such work, instead of the present task system, it is the wish of the Lords of the Treasury that these works should be so executed; and the Board consequently direct that (regard being had to any preparation that may have been already made for executing such works under the present system), in every case where the engineer shall be of opinion that such works can be advantageously or economically, or more quickly so executed, he will, after reporting the facts to the Board, prepare the necessary designs and specifications for the adoption of this system.

7. In all cases of districts suspended, or likely soon to be suspended, for second assents, the engineers are directed to inform the proprietors that funds are now provided, and that the works will be completed on the receipt of the assents of the proprietors for a majority of the acres in each case; and where supplemental reports have not been furnished in any cases so suspended, or likely to be suspended, the engineers are directed to furnish same without delay, so that they may be forwarded to the proprietors with the forms of second assents; and, if necessary, a meeting held for the purpose of affording any explanation required by the proprietors.

8. The engineers are also directed to take every opportunity of explaining to the proprietors the increase of debt, and other injurious effects resulting from delay in furnishing second assents, as set forth in the Board's Sixteenth and Seventeenth Annual Reports, and in the prefatory remarks directed by them to be printed with Supplemental Reports, a copy of which is furnished to you.

9. The Board, as will be seen from their Annual Reports, are fully sensible of the disadvantages under which their engineers in this service have laboured, in consequence of the suspension of works for want of funds and second assents. The first of these difficulties having been now removed, the Board wish to urge upon the engineers that by judicious timely arrangements, and energetic conduct of the works, much of the evils and increased expenditure caused by these suspensions may be remedied during the ensuing working season. To the accomplishment of this object, so essential to the character of the service, and to the professional reputation of the engineers themselves, the primary step is the judicious laying out of every portion of the work that can be undertaken this season, and the arrangement of the taps or unwatering courses, so as to avoid any suspension of the main works by reason of floods, or at least to provide for these suspensions being of the shortest possible duration.

Appendix D.

10. In some parts of the country, a barrier to the vigorous execution of the works may, it is feared, from accounts already received, arise from the difficulty of procuring labourers in sufficient numbers; but this the Board hope may, to some extent, be guarded against, either by an immediate commencement of the continuous work to be thus afforded, or in extreme cases, perhaps, by obtaining men from the more populous parts of the country.

11. The Board again call the attention of the engineers to the instructions already given for carrying out a system of deep drainage in the designs to be submitted to them in all cases where the natural gradients of the country are low, and especially where the extent of contiguous flat land to be drained is considerable in breadth, so that the level of extreme floods may be kept below the outlet of main drains suited to a deep system of thorough drainage.

12. In all cases where the natural gradients of the country are steep, and the material to be cut through loose or friable, a different system is to be adopted, the principal feature of which is a broad channel, with flat sloping banks, or upright rubble walls, so that in extreme floods the depth of stream may not be so great as to injure the channel, and yet that their level may be sufficiently low to permit of the main drains of any deep thorough drainage system being occasionally discharged into the river channel, without injury from back-water. In this system, the occasional use of steps or rough weirs, judiciously constructed, may be found necessary; but, generally speaking, it will be more desirable to avoid their use.

13. The Board also, in urging the vigorous completion of works, again call attention to the necessity of making suitable provision for the subsidence of bog, peat, and alluvial soil in the lands to be drained, both by increased depth in the outlets, through rock or other hard material, and by previously deepening the minor drains through the river verge in such soils, before lowering the former level of the water in the old channel, and so prevent the falling in of these banks, which so frequently occurs in executing such works in a hurried manner.

14. In both classes of cases (of low and steep gradients), the provision of a sufficient and suitable sectional area is essential, and in order to fix what is sufficient, the Board again urge upon the engineers the necessity of actually observing and measuring the discharge in maxima floods from catchment basins of different extent, height, and declivity, and especially in districts where, from the completion or advanced state of the works, the final results of their execution can be more accurately measured, and a correct (if not mathematical) analogy drawn for deciding on the capacity of channels under similar circumstances in other districts.

15. The Board are aware how much the suspension of works in their hurried commencement may have led to an exceeding of the estimates, but the present provision of funds, the long time that the engineers have now had for the consideration of the projects, and the increased experience they have obtained, remove, in the opinion of the Commissioners, almost every ground of excuse for any future excesses of sanctioned estimates; and whilst the Commissioners for these reasons rely with confidence on the district engineers even to remedy some of the past evils arising during the suspension of the works, as before mentioned, and redeem the service from the censure which would attach to any future excesses (arising from causes under the control of the Board and its officers), they must further call their attention to the fact, that, under the Board's printed instructions, the district engineers are directly responsible to them for every item of expenditure, and every want of success in the execution of the important works entrusted to them.

16. Under no circumstances are the engineers to proceed with the execution of any work, even though already sanctioned, which after deliberate consideration they shall be of opinion will not produce direct advantages commensurate with the cost of their production, until they shall be fully reported to the Board, and a decision had thereon.

17. In no works is expense to be incurred for ornament or finish, which shall not be essential to the stability of the structure, or its utility for the purpose proposed.

18. The Board also desire to repeat their instructions that it is to be the fixed rule of the service, and to be made as generally and publicly known as possible, that no engineer, superintendent, or other officer whatsoever employed by them, except the district engineer, is authorized to incur any expenditure, order any goods or materials, or employ any person. And to save litigation, or any liability on the part of the Board for claims made by parties purporting to have been employed by the officers of the Board, it is distinctly required that every person employed by, or having any dealing with, the Board or its officers for the purpose of this service, shall, before entering upon such employment or dealing, or before continuing the same if already entered upon, bind themselves in all matters of dispute between them and the Board's officers, to abide by the decision of the Board, or any one or more of the members thereof.

19. The Board also remind the engineers of the instructions already given, that notwithstanding the appointment of any of the assistants or subordinate officers which may have been made or sanctioned by this Board, the district engineer is held by them responsible for the efficiency of every person employed under them; and the Commissioners expect and require that any person incompetent or unable to perform the duties required of them, shall be

be reported to the Board with a view to their dismissal or removal; and the Board further hold the district engineer responsible for the salary of any subordinate officers who shall be retained if there be not sufficient employment for them.

20. The Commissioners direct that under no circumstances shall accounts be allowed to run in arrear, so that as soon as possible after the end of each month every outstanding claim may be liquidated.

21. The Board direct that the plans, sections, reports, field books, and every document or article in the possession of the district engineer, or their assistants, belonging to the preliminary inquiry of any district, the works of which have not been commenced, may be without delay scheduled, labelled, made up in suitable parcels in whatever state they may now be, and sent to this office for lodgment and reference.

22. Finally, the Board, in ordering the recommencement and completion of the works in hands, refer the engineers and their assistants, and other officers, to the whole code of instructions issued for their guidance in their several departments, a strict compliance with which they will be required to show in all cases of inspection by the members of this Board or its principal officers.

23. The district engineers are required to furnish a copy of these instructions to their principal assistants, in order that they may be cognizant of the Commissioners' orders and wishes, and cordially co-operate with the engineers in carrying out their onerous duties.

24. The district engineers are required formally to acknowledge the receipt of these instructions.

25. The letters acknowledging the receipt of these instructions are to be specially produced to the Board.

By Order,

E. Hornsby, Secretary.

River Drainage—Circular, No. 57.

(Registered No. 20,878/51.)

Sir, Office of Public Works, Dublin, 11 July 1851.

1. I am directed by the Board to forward to you the accompanying Form for recording the observed fall of rain, and discharge of rivers or parts thereof, as compared with their catchment basins, and to request that you will, without delay, have some carefully filled with the information required, as to all observations made by you, or under your directions, for any number of years previous and up to the 1st of April last, for each district under your charge.

2. The Returns already furnished by the engineers, in various forms, have shown such important results, that the Commissioners have had these forms prepared, in order that the observations, being reduced to a uniform system, a comparison may be instituted between them, and as far as practicable, the influences of different causes on the discharge of rivers ascertained; and the engineers are now called upon to fill these returns for back periods, inasmuch as in many cases the returns already made do not contain the requisite information; and besides, it is the wish of the Commissioners that by having the necessary information as to catchment basins and other permanent features of the district filled by the engineers, their attention will be drawn to the effect produced on the discharge by causes which may have otherwise escaped notice, and much useful information elicited.

3. It is of great importance to note the state of advancement of the drainage works at the time of observation, and to compare the discharges in districts unopened and liable to floods, over extensive tracts of bottom lands, with those in which the arterial drainage works are partially or fully opened throughout the main channel and its tributaries.

4. The comparison of the minimum discharge from districts previous and subsequent to the opening of the whole system of drainage is also very important, and the Commissioners expect to receive from the engineers authentic information on the subject.

5. The situation of the rain-gauges used, and their numbers within the district, so as to arrive at an approximate test of the accuracy of the recorded falls of rain, should, with the form and dimensions of the rain-gauge, be noted in each case.

6. The completion of the works in many districts has afforded opportunities for obtaining information on this subject rarely possessed by any country, and the effects already observed have been so serious in some cases as to demand the most careful observation on the part of the Board's officers. It is therefore directed, that the necessary observations on rain-fall and discharge of water by river-courses, be continued in every district where any party is available

Appendix D.

available for the purpose, and the results carefully tabulated in the printed forms now furnished.

7. The returns for observations previous to the 1st of April last are to be furnished complete on or before the 1st of August next; and the returns from the 1st of April to the end of the year are to be furnished with the annual report for the district.

8. The latter returns are to be duly filled as the observations are made, so as to be ready for examination whenever required at the district office.

I am, &c.

To Secretary.

(Circular, No. 71.)

Sir, Office of Public Works, Dublin, 15 April 1852.

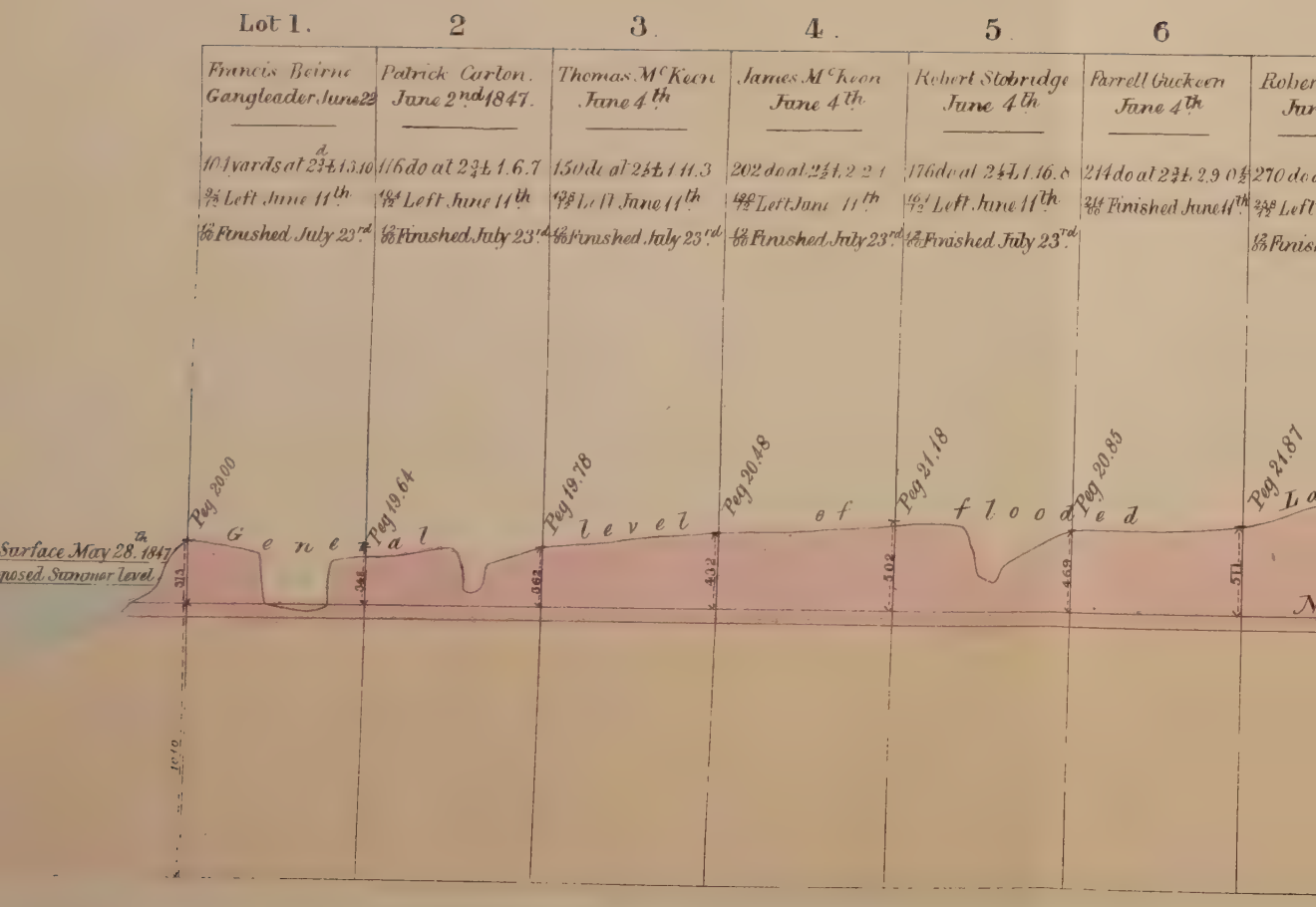
Orders having been received from the Treasury that no expenditure in excess of the estimate, or any material alteration shall be made in any work, without the express sanction of their Lordships in each case, I am directed to call your particular attention to the above order, and to desire that in future you will act strictly in accordance with it; and on no account incur any expenditure in excess of the estimate, or make any alteration in any work, until you have received authority to do so by an official letter from this Board, signed by the Secretary.

In all cases where the approval of the district or directing engineer, or the Commissioner in charge of the department, may have been obtained on the spot, you will send up an estimate and specification of the work as approved, addressed to the Secretary; but you are not under any circumstances to commence the work until you have received the sanction of the Board to do so, signed by the Secretary.

By Order,

Edward Hornsby, Secretary.

To J. Latimer, Esq., O. P. W.


Lot 1.
2
3.
4.
5
6
Francis Beirne Gangleader June 22
Patrick Carlon. June 2nd 1847.
Thomas M.c Keon June 4th
James M.c Keon June 4th
Robert Stobridge June 4th
Farrell Guckeen June 4th
104 yards at 2 3/4 1.13.10
116 do at 2 3/4 1.6.7
150 do at 2 3/4 1.11.3
202 do at 2 3/4 2.2.1
176 do at 2 3/4 1.16.8
214 do at 2 3/4 2.9 0 1/2
2/3 Left June 11th
1 1/2 Left June 11th
1 1/2 Left June 11th
1 1/2 Left June 11th
1 1/2 Left June 11th
2 1/4 Finished June 11th
1/6 Finished July 23rd
1/6 Finished July 23rd
1/6 Finished July 23rd
1/6 Finished July 23rd
1/6 Finished July 23rd
Peg 20.00
Peg 19.64
Peg 19.78
Peg 20.48
Peg 21.18
Peg 20.85
Peg 21.87
General level of flooded
Surface May 28. 1847
posed Summer Level
313
346
062
432
502
469
511

PLAN Nº 8.

[*To face Page* 288.

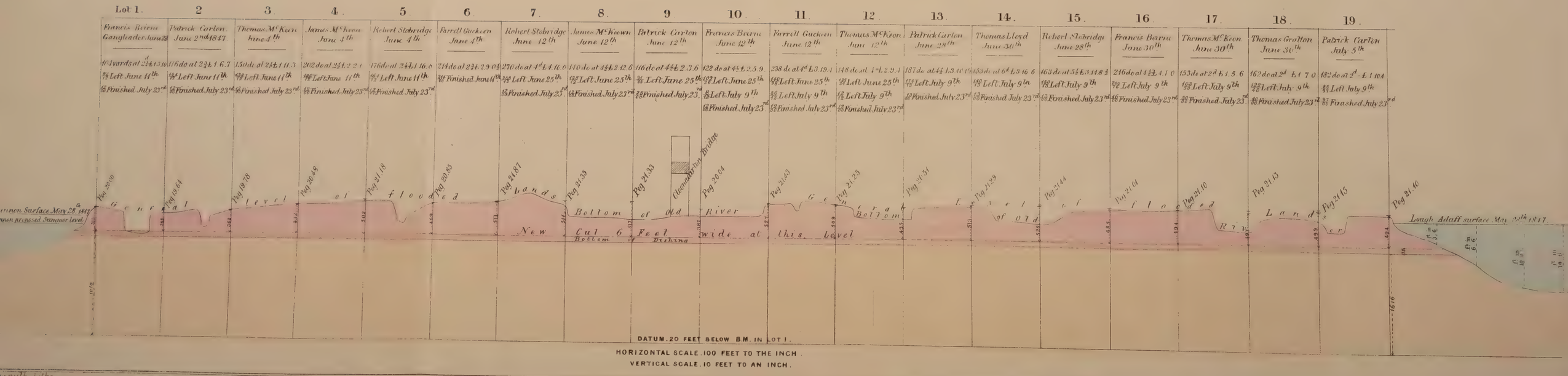
DRAINAGE,

HEADFORD DISTRICT.

SECTION FROM THE SHANNON TO LOUGH ADAFF.

Nº 1 DIVISION,

To accompany instructions to Assistant Engineers.



(Nº 10.) Ordered, by the House of Commons, to be Printed, 22 November 1852. Henry Hansard Printer

Appendix E.

Forms of Books, Accounts, &c., and Returns.

Drainage under the Acts 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4; and 10 & 11 Vict. c. 79.

Name of District _____ Count _____ of _____

Weekly Return of the Number of Men employed on the Works at _____ Division, between the _____ day of _____ 185 , and the _____ day of _____ 185 , both Days included.

Note.—This Return must be sent off from the Station, so as to be received at the Commissioners' Office in Dublin, on the Tuesday morning of the following Week.

Day.	Date.	Check Clerks.	Overseers and Foremen.	Carpenters and Sawyers.	Masons and Stonecutters.	Quarrymen.	Excavators.	Labourers.	Horses and Carts.	Number of Men Employed: Total.	Meteorological Observations: Wind.	Weather.	Height of Water on Lock, Sill or Gauge: Feet.	Inches.	Journal of the Progress of Works, and other Remarks, to be detailed as much as possible, with Cause of Increase or Decrease in Number of Persons employed, &c.
Monday - -															
Tuesday - -															
Wednesday -															
Thursday -															
Friday - -															
Saturday -															
Sunday - -															
Total - -															

Names of Engineers, Overseers and Check Clerks.	In what Capacity employed.	Rate of Pay per Day.	Quantity of Work executed: Cubic Yards Earth.	Cubic Yards Rock.	Probable Cost of Work executed. £. s. d.	Proportion of Superintendence on Labour, per Cent.	Materials delivered on Works during the Week: Description.	Quantity.	Probable Value.

Observations.

Poor-law Unions in which the District is situated.

Name of Union.	Number of Men employed.	Estimated Amount earned. £. s. d.	Observations.
Total - -			

Signature of Engineer or Person in charge, _____

Post Town, _____

Date, _____

(Indorsed.)

DRAINAGE.

WEEKLY RETURN of the Number of Men employed on the Works,

at _____ Division,

_____ District,

from _____ day of _____ 185

to _____ day of _____ 185

Signature of Resident Engineer or Person in Charge, _____

Post Town, _____

Date, _____

Road, ending 184

MEN'S NAMES.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Total of Days.	Wages per Day.	OBSERVATIONS.

Works at_____

Chargeable to_____

From _____ to _____ 18____

Number of Lot.	Number of Mill.	Date of Commencement of Work.	Name of Gang Leader.	Date when measured.	Dimensions in Yards and Decimals.				Rate.	Amount.	Observations.
					Length.	Breadth.	Height.	Quantity.			
										£. s. d.	

River Drainage, Acts 5 & 6 Vict. c. 89, 8 & 9 Vict. c. 69, and 9 Vict. c. 4.

Works.
G.

_____ District, in the Count ____ of _____

ABSTRACT of ACCOUNTS for the _____ ending the_____ day of_____ 185____.

Note.—This Abstract to be furnished with the Returns of Expenditure for each Period.

NAME OF WORK.	Length of Drains or River Course opened.	Quantity of Earth Work.	Cost.	Quantity of Rock Work.	Cost.	Quantity of Masonry.	Cost.	Cost of Unwatering.	Cost of Smiths' Work.	Cost of Carpenters' Work.	Cost of Watchmen, Tool Boys and Messengers.	Cost of Horse Work.	Cost of Superintendence, not including Engineers' Establishment.	Cost of Plant, Tools and Materials not used in the Works.	Cost of Incidents and Materials used in Works.	Total Cost.	Observations.
	Stat. Mls.	*Cub. Yds.*	£. s. d.	*Cub. Yds.*	£. s. d.	*Cub. Yds.*	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	
Add Cost of Engineer's Establishment* -																	
TOTALS - -																	

* At the periods when Returns therefor are made.

(Indorsed.)

River Drainage, Acts 5 & 6 Vict. c. 89, 8 & 9 Vict. c. 69, and 9 Vict. c. 4.

_____

_____

_____ District,

In the Count ____ of _____

_____

_____

_____

_____

WORKS.

ABSTRACT OF ACCOUNTS

for the _____ ending the _____ day

of _____ 185

Total, £. : : :

_____

Engineer.

Drainage Acts,

5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4; and 10 & 11 Vict. c. 79.

District of _____ Count ____ of _____

Division _____

DUPLICATE OF

Docket No. _____ handed to _____

Gang Leader in proof of the letting of Lot—No. _____ of the work to be executed in the above District and Division, containing by measurement _____ of _____ work, at the rate of _____

_____ { Signature of Superintendent.

EXTRA WORK.

Date when ordered.	Nature of Work.	Price.	Amount.	

_____ { Signature of Superintendent.

(OVER.)

Drainage Acts,

5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4; and 10 & 11 Vict. c. 79.

District of _____ Count ____ of _____

Division _____

Docket No. _____ handed to _____

Gang Leader in proof of the letting of Lot—No. _____ of the work to be executed in the above District and Division, containing by measurement _____ of _____ work, at the rate of _____

_____ { Signature of Superintendent.

EXTRA WORK.

Date when ordered.	Nature of Work.	Price.	Amount.	

_____ { Signature of Superintendent.

(OVER.)

Work returned for Payment on account of this Docket.

Dates of Measurement.	Amount to be Paid.	OBSERVATIONS.
Total - - £.		

Work returned for Payment on account of this Docket.

Dates of Measurement.	Amount to be Paid.	OBSERVATIONS.
Total - - £.		

Labourers' Assessments and Docks.

Drainage Acts, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4, and 10 & 11 Vict. c. 79.

District of_____

County _____ of _____

We, the undersigned gangers and labourers employed on works of drainage, &c., in the above-named district, do hereby agree to conform strictly to all conditions made by the Commissioners of Public Works, for the execution and performance of the works, by task or measurement, as let to us by the officers appointed by them, and to the times and manner of making the periodical payments established, or to be established by the Commissioners of Public Works, so long as we shall continue in the employment of the said Commissioners, or their authorized officers.

And we do further agree and hereby appoint, that _____ shall be, during the execution of the above-named work, our gang leader, to receive instructions from the above-named officers, or any one of them, and to attend at the appointed place of payment to receive the periodical payments due to us from the Paymaster, and that we will divide the money earned equally to each individual, according to the time he may have wrought.

And we further agree to be responsible for all tools and implements delivered to us by the before-mentioned officers for the execution of the work, and that the full value of any tools or implements which may be lost or destroyed, shall be deducted from the money due to us, except in cases where they may have been worn out in the execution of the work.

Dated this _____ day of _____ 185

No.	Name.	Townland.	Poor Law Union.

Witness to the above signatures or marks,

Address,

D

Drainage Acts, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4; and 10 11 Vict. c. 79.

RETURN from the OVERSEER to the DISTRICT OFFICE.

_____ District.

_____ Division.

A RETURN of Works executed under the Superintendence of _____ Overseer, for _____ ending _____ day of _____ 18 .

No.	NAMES.	Number of Mile, or other Division of District in which Work was executed.	Particulars of Work executed.	Description of Work executed.	Quantity of Work executed.			Price.	Amount.	Total Number of Days' Work in each Task.	Observations, stating all Occurrences of Interest, State of Weather, &c. &c. (to be abstracted from Overseer's Journal, with Dates.)
					Days' Work.	Night Work, or extra Time.	Task Work.				

(Indorsed.)

Drainage, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; and 9 Vict. c. 4.

_____

WORKS.

OVERSEER'S RETURN.

For _____

ending _____ day of _____ 18

_____ Overseer.

_____ Engineer.

Drainage Act, 5 & 6 Vict. c. 89, 8 & 9 Vict. c. 69, and 9 Vict. c. 4. C.

Works chargeable to _____ Account.

Works _____ District. Count ___ of _____

Account of Expenditure, exclusive of Labour, for the period between the _____ day of _____ and the _____ day of _____ 18 .

No.	Names of Persons.	Nature of Service or Supply.	SUPERINTENDENCE.					Plants and Tools.	Incidents or Materials to be used in the Works.	Amount paid to each Person.	We, the Undersigned, have received the Sums placed opposite our Names.	We, the Undersigned, respectfully certify to having witnessed the acknowledgment of their Marks by the Parties named in the adjoining Colmmn, who were unable to write.	OBSERVATIONS.
			No. of Days.	Rate per Day.	Amount of Salary.	Travelling Expenses.	Postage.						
				£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.			

Appendix E.

CERTIFICATES.

_____ HEREBY CERTIFY, that the within Account, amounting to _____

_____

is correct in every particular, and that the persons therein named have been employed for the time in the duties or for the purposes respectively therein stated, and have fully and fairly performed the same.

_____ Overseer.

Countersigned by the Check Clerk or party who made out the above-mentioned Account. }

_____

Dated this _____ day of _____ 18____

I have examined the within Account, and certify that the same is correct, and the amount thereof justly due to the parties therein named.

_____ Engineer.

Dated this _____ day of _____ 18____

_____

CERTIFICATES of PAYMENT.

I CERTIFY, that I have paid to the persons named in the within Account, who have acknowledged the receipt by their signature or mark, the sums placed opposite their names, and that the whole of such payments amounts to the sum of _____

_____

_____ Pay Clerk.

Dated this _____ day of _____ 18____

_____ CERTIFY that _____ have witnessed the payment by _____ of the several individuals mentioned in the within Return the sums set opposite their names, as testified by their respective signatures or marks.*

_____

Dated this _____ day of _____ 18____

* Here add the names or numbers of any individuals who were not paid in witness's presence.

(Indorsed)

Drainage Act, 5 & 6 Vict. c. 89, 8 & 9 Vict. c. 89, and 9 Vict. c. 4.

_____

Count ____ of _____ District.

WORKS ACCOUNT (Exclusive of Labour).

Chargeable to _____

From ____ of _____ 18____

To ____ of _____ 18____

ABSTRACT.

	£.	s.	d.	£.	s.	d.
Salary - - -						
Travelling Expenses						
Postage - - -						
Plants and Tools - - -						
Incidents - - -						
Materials to be used in the Works - - -						
TOTAL - - - £.						

Appendix D.

B.

Drainage Acts, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4; and 10 & 11 Vict. c. 79.

_____ District. Count___ of _____ Works chargeable to _____ Account.

Works _____

ACCOUNT of EXPENDITURE for LABOUR, between the _____ day of _____ and the _____ day of _____ 185 .

No.	Names.	Nature of Employment.	Daily Labour.			Number of Lot.	Task Work.			Total Amount paid to each Person.	Signature.	Observations.
			Number of Days.	Rate per Day.	Amount.		Quantity performed.	Rate.	Amount.			
					£. s. d.				£. s. d.	£. s. d.		

CERTIFICATES.

——HEREBY CERTIFY, that the within account, amounting to——

is correct in every particular, and that the persons therein named have been employed for the time in the duties, or for the purposes respectively therein stated, and have fully and fairly performed the same.

——Overseer.

Countersigned by the Check Clerk or party who made out the above-mentioned Account.

Dated this——day of——185—

I have examined the within Account, and certify that same is correct, and the amount thereof justly due to the parties therein named.

——Engineer.

Dated this——day of——185—

I CERTIFY, that I have paid to the persons named in the within Account, who have acknowledged the receipt by their signature or mark, the sums placed opposite their names, as balance remaining due, and that the whole of such payments amounts to the sum of

——Pay Clerk.

Dated this——day of——185—

——CERTIFY, that——have witnessed the payment by——of the several individuals mentioned in the within Return, the sums set opposite their names, as balances, as testified by their respective signatures or marks *

* Here add the names or numbers of any individuals who were not paid in witness's presence.

Dated this——day of——185—

(Indorsed)
Drainage Acts, 5 & 6 Vict., c. 89, and Acts amending same.

——District.
——of——

WORKS ACCOUNT.

At——

LABOUR.

Chargeable to——

From——of——185—
To——of——185—

ABSTRACT.

Daily Work - - - - £.
Task Work - - - - £.
TOTAL - - - £.

Appendix E.

B.

SERVICE.

N.B.—This List is not to include any tradesmen's bills, or any other service but labour.

City_____

County_____

Barony_____

or Electoral Division, _____

SCHEDULE of LABOUR LISTS handed to_____ Paymaster, for payment for*_____ ended_____ day of_____ 18

DISTRICT.	No. of List.	Name of Division, District or Work.	Amount of Certified Returns or Lists.	OBSERVATIONS.
			£. s. d.	
		£.		

The above is a correct schedule of the labour lists, certified by me for the*_____ ended_____ day of_____ 18 , and the whole amounts to†_____ pounds,_____ shillings, and_____ pence.

I request that Mr._____ Paymaster at_____ may be put in funds to pay these Amounts.—*See* Board's Circular, dated 28th January, 1848.

Dated at_____ this_____ day of_____ 18 .

In Charge.

* Insert here "week" or "fortnight," as the case may be † To be inserted in words at length.

Appendix E.

Drainage Acts, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9. Vict. c. 4; and 10 & 11 Vict. c. 79.

MONTHLY ABSTRACT.—WORKS.

Account of Expenditure.

_____ District.

Count____of_____

Total Estimate, £._____Total Expenditure, £._____Total for Month of_____

Name of Work, Reach, Division of District, or other Head of Account.	Amount of Estimate.	Total Amount of Expenditure up to Date of this Return, on		OBSERVATIONS.
		Each Reach or Work.	Extra Works (if any), sanctioned by the Board, in writing, referring to Dates of Orders.	
	£. s. d.	£. s. d.	£. s. d.	
Total - - -				

We certify this account to be correct.

Dated this____day of_____185 .

_____Clerk.

Drainage Commission Office,

_____District Engineer.

_____(Post Town.)

(Indorsed)

Drainage Acts, 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4; and 10 & 11 Vict. c. 79.

MONTHLY ABSTRACT.—WORKS.

Account of Expenditure.

_____ District.

Total Estimate - - - £._____

Total Expenditure - - £._____

Ditto for Month - - £._____

District Engineer.

Appendix E.

ENGINEERS' JOURNAL of the Works on the_____District,

Count____of_____

_____day, the_____day of_____18_____.

Number of Persons.	Persons employed.	Number of Days.	Observations on Progress.
	Engineer - - - -		
	Superintendent - - -		
	Gangers - - - -		
	Draftsmen - - - -		
	Clerks - - - - -		
	Enginemen - - - -		
	Millwrights - - - -		
	Carpenters - - - -		
	Sawyers - - - -		
	Stone-Cutters - - -		
	Masons - - - -		
	Smiths - - - - -		
	Labourers - - - -		
	Boatmen - - - -		
	Man with Cart and Horse -		

REGISTRY of FALL of RAIN, &c., T

At_____during the Month of_____185

Day of the Month.	Time of Observations. H. M.	A. M. or P. M.	Height of Water: In Tube of Rain-Guage.	Height of Water: On Surface of Earth.	Direction of Wind.	State of Weather, whether Dry, Showery, or Wet, &c.	Observations, stating any sudden Falls of Rain in a short Time, or other interesting Facts, &c.
			Inches. Tenths.				

Appendix E. PUBLIC WORKS—RIVER DRAINAGE. Q.

LIST of IMPLEMENTS required for DRAINAGE WORKS.

District of

	Quantity on Hands.		Quantity required up to	Price for which they can be procured in this Locality.	OBSERVATIONS.
	Effective.	Non-effective.			
WOOD.					
Handcart					
Wheelbarrow					
Handbarrow					
Ashlarbarrow					
Boxbarrow					
Waterscoop					
Pickshafts					
Gang-ladder					
Horse-box					
Tressel					
Timber, in Planks and Logs for Wheeling Planks					
IRON.					
Clay-picks					
Quarry-picks					
Quarry Bars of different sizes					
Quarry Hammers of different sizes for splitting, boring, &c.					
Quarry Jumpers of different sizes					
Beaters					
Scrapers					
Spades } English Shovels }					
Shovel Heads for long handles					
Falling Bars					
Quarry Wedges					
Stone Hammers, cast-steel					
SUNDRIES.					
Forge Furniture, viz:—					
Anvil					
Bellows					
Forge Front					
Hammers					
Sledges					
Tongs					
Vice					
Screwplates and Taps					
Assorted Iron Mandrils					
Sand Screens					

District Office,

Engineer or Person in charge

A 1.

Drainage, Acts 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; and 9 Vict. c. 4.

RETURN of EMPLOYMENT.

Name _____.

Between the _____ day of _____ 185 , and the _____ day of _____ 185 .

Date.	Name of the District on which employed.	Number of Hours employed on each Work.			Number of Days, or Portions of Days, on each District.	Name of Place where stationed each Night.	Nature of Employment.
		In the Field.	In the Office.	TOTAL.			

Appendix E.

ABSTRACT.

Name of District on which employed.	Total Number of Days, and Parts of Days, employed on each District.	OBSERVATIONS.
TOTAL - - -		

I certify the foregoing to be a correct and true Account,

Signature _____

Counter Signature _____

(Indorsed.)

Drainage, Acts 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; and 9 Vict. c. 4.

Name _____

RETURN of EMPLOYMENT.

Between _____ day of _____ 185

and _____ day of _____ 185

Appendix E.

District of_____.

Date.	Folio in Ledger.	DIVISION.	No. of Pay Sheet.	Description of Item of Account.	Amount of each Pay Sheet.	Amount of each Division.	Total Amount.
					£. s. d.	£. s. d.	£. s. d.

RIVER DRAINAGE UNDER THE ACTS. - - - - - - - -

ACCOUNT of MATERIALS ISSUED from the DISTRICT STORE, at _____

from _____ day of _____ 18 .

ISSUED. - - - - - - - - - - - - - -

DATE.	Name and Address of Persons to whom Issued.	IRON.						STEEL.		POWDER.	FUSE.	COAL.	TURF.	SAND.	LIME.
		Description.	Dimensions.			Wrought.	Cast.	Description.	Weight.	Quantity.	Number of Coils.	Quantity.	Boxes.	Tons.	Barrels.
			Length.	Breadth.	Thickness.										
			Feet.	Inches.	Inches.	Cwts. qrs. lbs.	Cwts. qrs. lbs.		Cwts. qrs. lbs.	Barls. lbs.		Tns. Cwts. Bgs.			
Total for above-named Period -															
Balance in Store on day of															
Total accounted for - - -															

- - - - - - - - River Drainage under the Acts.

in charge of _____ Storekeeper.

to _____ day of _____ 18 _____

- - - - - - - - - - - - - - - - ISSUED.

TIMBER.								NAILS.			CUT STONE.		Miscellaneous Articles.	Name of Carrier or other Person to whom delivered.	Observations, stating for what Purpose issued, &c. &c.
FOREIGN.					NATIVE.										
Kind.	Number of Pieces.	Length.	Breadth and Thickness.	Cube Feet.	Kind.	Number of Trees.	Cube Feet.	Description.	Number.	Weight.	Description.	Cube Feet.			

DRAINAGE (IRELAND). - - - - - - - - - - -

Drainage, Navigation and Water-power, under the Acts 5 & 6 Vict. c. 89,

DISTRICTS in which the Works are in progress. - - - - - - -

DISTRICT.	COUNTIES in which situate.	Date when Works commenced.	Area of Flooded and Injured Lands; Statute Measure.	Estimated Cost of Works.	Estimate of Extra Work sanctioned (if any).	TOTAL Estimated Cost of Works.	EXPENDITURE FOR THE YEAR ON WORKS. - - -		
							Preliminary Expenses.*	Labour.	Masonry.
			A. R. P.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.

* These Columns to be filled in the Accountant's Office.

I certify this Account to be correct.

Dated this _____ day of _____ 184 .

District Drainage Office,

_____

_____ Post Town.

\- - - - - - - - DRAINAGE (IRELAND). F.

& 9 Vict. c. 69, 9 Vict. c. 4, and 10 & 11 Vict. c. 79.

\- - - - - - DISTRICTS in which the Works are in progress.

EXPENDITURE FOR THE YEAR.						Total Expenditure from the Commencement of Work.*	Quantity of Rock and Earth Work removed.	Length of Rivers and Main Conduits opened.	Length of Minor Drains opened.	Equivalent of Men's Labour in Day's Work of One Man.
\- - WORKS.			MISCELLANEOUS.		TOTAL for Year.					
Incidents and aterials used the Works.	Implements, Machinery and Tools.	Super-intendence and Travelling Expenses.	Compensation for Damage.	Interest on Borrowed Money.*						
£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	Cubic Yds.	Statute Miles.	Statute Miles.	

Department in Dublin.

_____ Clerk or Accountant.

_____ District Engineer.

(Indorsed.)

Drainage, Acts 5 & 6 Vict. c. 89; 8 & 9 Vict. c. 69; 9 Vict. c. 4; and 10 & 11 Vict. c. 79.

Districts in which Works are in progress, and Expenditure thereon, for Year ending 31 December 184 .

District Engineer.

Brought from the Lords, 22 November 1852.

REPORT:

DRAINAGE OF LANDS (IRELAND).

Ordered, by The House of Commons, *to be Printed,*
22 November 1852.

[*Price 7 s.*]

10.

Under 2 lb. 12 oz.